The Builder.

No. CCCXCVI.

SATURDAY, SEPTEMBER 7, 1850.

THE area in Hyde-park for the proposed International Exhibition of 1851, is wholly enclosed by a hoarding, so constructed as not to injure by a nail the boards that compose it, and which are probably to form the floor of the intended structure: there are no castings yet on the ground, but temporary offices and sheds have been erected, and everything seems ready for a fair start when the materials arrive. The hoarding, we may mention by the way, is formed thus:—two battens, about an inch and a half apart, are fixed upright in the ground at regular distances: between these, 1½-inch deals are laid edge upon edge, the ends being clipped by the battens; and the top of the latter being fastened together by a piece of iron hooping, the whole is made firm and secure.

We have now the pleasure to lay before our readers a perspective view of the building as it will appear seen from the south-west, a ground-plan of the structure, showing its general divisions, with position of the proposed gallery (shaded dark), and a geometrical elevation of the transept.*

Our readers may compare them with the illustrations we published of the design originally issued by the Building Committee.† The plan is a parallelogram, 1848 feet long and 408 feet wide, with an addition on the north side, 936 feet long and 48 feet wide. The height is 66 feet. Nearly midway, 900 feet to the centre, on west side, and 948 feet on the east, a transept is formed, with a semi-circular roof, 108 feet high from the ground, to enclose a group of trees. This further serves to break the long line of the side elevation, and marks out the central entrance. There is another principal entrance at each end. The main parallelogram is formed into 11 divisions longitudinally, alternately 24 feet and 48 feet wide, with the exception of the great central walk, which is 72 feet broad. There are three large refreshment courts. The area on the ground-floor is 752,832 square feet: the area of the galleries included in the contract, and the position of which is marked on the plan by a dark tint, is 102,528 square feet, making a total of 855,360 feet. Other galleries may be introduced if needed, at an extra cost, affording an additional available area of 90,432 square feet.‡

As materials for consideration, we may here mention that the space demanded by the metropolitan districts, up to August 1st, is 27,774 square feet of floor or table, and 24,243 square feet of wall space. For Manchester, it is said, 10,000 square feet have been guaranteed. America has accepted 80,000 square feet.

On either side of the central entrance are the pay-places, rooms for the Royal Commissioners, the committee, clerks, &c. At the east and west entrances are pay-places and clerks' rooms.

The construction is of iron and glass: but externally, for enclosure, some wood is used. The iron columns are placed 24 feet apart, and in each space between these, externally, are two wooden columns of the same size. Of cast-iron girders, we are told, there are 2,244 for supporting galleries and roofs; 1,128 intermediate bearers; 358 wrought-iron trusses for supporting roof; 3,230 columns; 34 miles of gutters for carrying water to the columns, which are hollow, and serve as water pipes; 202 miles of sash bars, (?) and 900,000 superficial feet of glass.* Some of these particulars differ from those given by Mr. Paxton in his remarks at Bakewell (see p. 403, *ante*), but are, we believe, correct.

The spaces between the columns next the ground, and elsewhere, are fitted with moveable louvre-plates, of iron, for ventilation.

The roof, also of glass and iron, consists of a series of ridges and valleys, 8 feet span, running transversely, so that there is a valley at

the head of each column. As we have elsewhere mentioned, Mr. Paxton contemplates covering the greater part of the building with canvas, to be watered in hot weather.

We do not see where the steam-engine is to be placed: vibration must, of course, be guarded against.

The amount of the contract by Messrs. Fox and Henderson for the use and waste of the materials employed in the building, is 79,800*l.*, the whole building to become the property of the contractors, and to be removed by them. If, on the contrary, the building be permanently retained, the cost of it will be 150,000*l.*†

With reference to some flourishes that are being indulged in as to the execution of the work, and the arrangement that the whole building is to be covered in by January 1st, we would say that when the structure is finished and the promise kept it will be quite early enough to glorify the speed and praise the execution. The powerful family influence which was exerted in favour of the present design, the great injustice done by its acceptance to the architects and engineers who gave their time and thought to the work in reply to the commissioners' invitation, and the way in which the arrangement was entered into with the contractors for the execution of it without competition, lead us to view the rising structure with less confidence and less pleasant feelings than we should otherwise have gladly hastened to express.

A FEW GROPINGS IN PRACTICAL ACOUSTICS.‡

As there is much not only in the building, but in the auditory, to influence hearing, so is there also much in the speakers themselves: as the conformation of the ear may be more or less favourable for the reception of sound, so that of the mouth probably is favourable or otherwise for giving it distinct utterance, according as it may throw the voice in a mass against the readiest reverberating surfaces, or allow it at once to scatter, and so lose much of its propulsive effect. Those who possess the mysterious gift of volubility are not always favoured with the clearest enunciation; and there are many who show themselves satisfied with the bare fact of speaking, and have no care for the comfort of those who have to listen: such persons would cause detraction to any building as regards its sounding properties.

We use the term *reflection* of sound; but that, we apprehend, is a phenomenon which is very rare, since it is the sound of the substance impinged upon which is awakened, and not simply a reverberation or echo of the sound whose pulsations excited it: were this not the case such propagation of sound might be less objectionable; but the tone and quality of the original sound being liable to infelicitous accompaniments, its prevention becomes a desideratum. It will be found that every apartment has its key-note to which a speaker must pitch his voice aright ere he can speak or be heard with comfort; and, as in musical instruments, so, we should suppose, in buildings, they must be attuned by use before their acoustic properties can be established. The wave-like vibrations of the air, produced by sound, are in number and velocity according to the pitch of the tone, those from low notes being slower and fewer than those from high ones; consequently the sound in the former is not carried so far; to be heard properly, therefore, it is necessary that *force* be combined with *pitch* in the voice in order to adapt it to a large apartment; and hence it may be found that some who have become accustomed to speak in an apartment of a given size cannot all at once adjust their voice to, or discover the pitch of, one that is of larger dimensions.

In church-building, we have known the sloping sides of a high-pitched, open-timbered roof prove very favourable to hearing; yet this roof was open to the ridge, and the space overhead was consequently great: had the sound proved deficient, a ceiling laid upon the collar-beams, about two-thirds up, would have been advisable. In the same church, the galleries projected some three feet from the beams which carried them, and a portion of the soffite was sloped parallel with the roof: this slope was also considered advantageous to the hearing. What conduced farther to success, was the circumstance that in a shallow, arched recess (or chancel) behind the pulpit, the back, instead of being at right angles with the axal line of the church, formed at the centre a very obtuse re-entrant angle, having thus two slopes affording very favourable surfaces for returning the backward rays of sound. Thus much for form. The wall-plastering was immediately on the masonry, without battens and lathing; consequently there was no absorption or passage of sound there: the proportion which the plain walls bore to the windows was also considerable, these being narrow and few; so that the loss by these was reduced to a minimum.

The sounding-board over a pulpit or rostrum serves at once to prevent loss of sound through excessive height of ceiling, and to direct it towards the auditory: it has been employed with great success, in form of the quarter of an oblong spheroid, placed so that the situation of the speaker's mouth corresponded nearly to the focus: with the concavity arching upwards, the open end in front, and the axis elevated forwards, the necessary effect was that the rays which impinged on it were scattered forth, and prevented being dissipated either above or behind: a similar portion of a paraboloid is equally suitable: a niche, segmental in plan, and semicircular-headed, struck from the position of the speaker, would be likely to afford a useful result. In the old stone-canopied seats on Westminster Bridge, the slightest whisper in one could be heard in that opposite it: from recollection, these did not form opposite ends of a long ellipse; but they might have done so with additional effect—the foci in the line of the inner side of the parapets.

The Isacoustic-curve, or curve of equal-hearing, of Mr. Jno. Scott Russell, presents an ingenious sectional arrangement for the sittings of theatres, &c., by which the speaker sees the faces of all his auditors,—they being therefore favourably circumstanced for hearing. We have seen a horizontal figure of equal-hearing,—being an egg-shaped diagram, showing the relative distances at which a speaker could be heard with equal distinctness,—in front—at either side—and in rear,—he being supposed to be speaking straight-forward: we think the distances were 70, 35, and 25 feet, but cannot recall it with certainty: it can, of course, be easily determined by experiment.

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* See pp. 426 & 427.
† See pp. 277 & 282, *ante*.
‡ The areas are computed to centre of columns.

* Messrs. Chance, of Birmingham, are, we believe, to supply the glass.
† The *Athenæum* says—"As already explained, the exhibiting surface will occupy a space of about 21 acres. The total cubic contents of the building will be 33,000,000 feet. The total amount of contract for use, waste, and maintenance is 79,800*l.*,—or very little more than nine-sixteenths of a penny per foot cube. The total value of the building, were it to be permanently retained, would be 150,000*l.* or rather less than one penny and one-twelfth of a penny per foot cube."
‡ See page 411 *ante*.

Theatres must be considered the most favourable for affording the opportunity of employing acoustical forms; since, although the performers may be many, the space within which they have to appear is limited: to their walls, ceilings, and seating, therefore, may severally be given those curvatures and angles which are known to be most conducive to the agreeable reception of sound by an audience. Much of the success, however, will always depend on the arrangement of the stage and proscenium: these, together, may be compared to a great speaking-trumpet—its tube, the stage, requiring to be close round the sides, and widening to the mouth; and the latter, or proscenium, having such a splay all round as at once to receive the sounds well from the stage, and give them out well to the house. The stage is usually sloped, about one-quarter of an inch to the foot, but varying according as the pit is relatively high or low: the sight is usually what determines this; but sound must also be considered as having a claim in the arrangement. The sides are usually open, divided by the wings: here, when a performer is speaking, back from the sphere of action of the proscenium, much of his voice is lost to the audience; and hence, when a deep scene is set, it ought to have, at all the wing openings (and not necessarily visible), what, in stage parlance, are denominated *tormentors*, namely, wings placed so as to enclose the stage like an apartment:* the same applies to the fly openings overhead. When a soliloquy has to be spoken, or a solo sung, the performer advances towards the foot-lights, when the difference, to the hearing, is usually very remarkable.

The business of the prompter might be facilitated by the introduction of a speaking-tube leading from the "prompt" side to the o.p., or "opposite prompt" side, and opening there with a wide trumpet-mouth, at a convenient level for the performers at that side to hear it: and, in very wide stages, where it is usual for the prompter to be placed in the centre, beside the foot-lights, and screened from the audience by an awkward-looking hood, an additional tube, with a similar trumpet-mouth, inclined to the performers at an angle of say 45 degrees, might obviate the necessity for the prompter being so placed, and afford him the means of communicating with the performers placed at either side and in the centre. By the use of such "prompt-tubes" the tendency of the performers to place themselves so as to face the prompter, so disadvantageous to those of the audience who happen to be seated at the o.p. side of the house, would be obviated. (*En parenthese*, speaking-tubes are not employed to anything like the extent to which they might be with advantage. How much time and fatigue would be saved if the necessity in private houses were done away with, of ringing for, and bringing a servant up perhaps two or three pairs of stairs, to receive orders which another journey is necessary to execute. In building new houses this should be looked to; and it is rendered the more simple and economical since Whishaw's invention of the Telekouphanon, or whistle-mouthpiece, has superseded the accompaniment of the bell, which was formerly in most cases necessary.)

The ancients are understood to have placed empty vases or pots in the walls of their theatres, forums, &c. in order to concentrate sound at particular points: such a course might probably be adopted with advantage in concert-rooms,—reverberations not being so objectionable in music as in oratory; and it would be likely to enhance the effect if tubes, or continuous rods of straight-grained wood, were laid as conductors from the place of performance to each concavity. Were theatres intended for musical performances only, a niche, in form the segment of a sphere, might be sunk in the back of every box in each tier, so as, by concentrated reverberation to give to the music a presence in the most extreme distances within the house. The following circumstance, related by Dr. Arnott, may be quoted in support:—One day, on board a ship sailing along the coast of Brazil, but far out of sight of land, the persons walking the deck, *when passing a particular spot*, heard distinctly, during an hour or two, the sound of bells, varying as in human rejoicings: months afterwards, it was ascertained that at the time of observation the bells of the city of St. Salvador, about 100 miles distant, had been rung on the occasion of a festival; and, favoured by a gentle wind, the last, or at least to the human ear, the inaudible vibrations of the sound had been conveyed thus far, and been concentrated to a focus by the concavity of a sail, and rendered sensible to the hearing.

It is not intended that the substance of this paper shall be much more than suggestive,—inducing thought, and prompting discussion, on a somewhat neglected, but very important and equally interesting subject; one which should be considered essential amongst structural arrangements. A few remarks as to the mode of applying materials may not, however, be amiss. Considering it convenient, then, to regard sound as a fluid, it is obvious that smooth surfaces, such as well-polished plastering on walls, will best permit it to glide or rebound along on its way; and be least permeable, or liable to absorb it, or permit its outward passage; also, that if such surfaces be formed directly on the solid, without any space between, the chance of such escape will be rendered extremely small: on the other hand if the wall-plastering be coarse, open-grained, and coated upon lathing, having a space between it and the masonry, the surface will be comparatively absorbent and non-reflecting. The same will apply to wood-fittings. Should the voice not be so powerful as to be heard with ease in the more remote corners, the transmissive power of wood-fittings (of which the fibres lie in the right direction) may be made advantageously available, if they are so arranged as to part in the proper place with the sound which they convey, and not so as to conduct it outside; while by jointing, panelling, &c., with a material which shall break the continuity of the wood, much of its tendency to carry off sound will be counteracted; and by filling up the space behind it in like manner, its absorbency will be also reduced: for the former purpose, vulcanized india-rubber might prove serviceable, and for the latter, hemp-waste or sawdust.* In ceilings, were the laths separated from the joists with strips of felt; and in floors, were the boards separated from the joists with the same material, it would probably be found advantageous. Precautions of these kinds apply to all surfaces, whether vertical or horizontal. In continuation, were everything avoided which we knew was calculated to interfere with a uniform diffusion of sound, or which was liable to confuse it with echoes and resoundings;—were ventilation efficient, and so arranged as not to carry sound away;—were harmony in form and colour accomplished, so as that no obtrusive objects should engage the eye to the neglect of the ear;—were windows made double to exclude street din, and prevented from rattling; doors to shut against felted rebates, hinges and latches well soaped, floors matted—not bare and covered with grit:—were these, and much more, both negative and positive, which each new case would suggest, systematically put in practice, benefit would accrue which would compensate for both the trouble and cost.

* So called by the performers, from the difficulty they present to those at the wings in watching the progress of the performance.

* A church in Aberdeen, the plastering on the walls of which was upon lathing, having proved very defective as regards hearing, the experiment was tried, with success, of (having stripped off the plaster) introducing into the hollow behind the lathing, between the battens, a firm body of the first of these latter materials.

ON THE ARCHITECTURE OF FURNESS ABBEY.

CLASSIFICATION OF STYLES—CISTERCIAN ABBEYS.

THE history of English architecture may be divided into seven distinct periods, of the earliest of which the remains are so few and left in such a fragmental condition that its comparative illustration is impossible. One principal division of Church Architecture has been recognised and adopted by all who have written on the subject; that, namely, which separates ecclesiastical buildings into two classes; in the first or earlier of which the circular arch was exclusively employed, and in the second or latter the pointed arch alone was used. To the former of these the term Romanesque has been given, and to the latter the term Gothic. This division is so simple, and at the same time so strongly marked, that without entering into a discussion as to the propriety of the terms themselves, but contenting ourselves with the fact that they are already in general use, we can have little hesitation in accepting this primary division as the groundwork of our system. At the same time it is manifest that, for purposes of detailed description, it is not sufficiently minute, and that a further subdivision is necessary. It is also clear that it excludes a large class of buildings that were erected during the period which intervened between the first appearance of the pointed arch, and the final disappearance of the circular arch; and of which the church of Furness Abbey is a valuable example. As regards the buildings of the Romanesque period, no subdivision of them can be more satisfactory than that which has already been for some time in use, and which divides them into those that were built before and after the Conquest, and designates them accordingly Saxon and Norman. As regards the buildings of that intermediate period just mentioned, to none can the term transitional be so aptly applied as to those which were erected under influences created by that remarkable contest between great antagonistic principles, which, after having been carried on for nearly half a century, terminated in a complete revolution in the style of building at the close of the twelfth century. Lastly, as regards the Gothic period, no sub-division of it appears to be so natural and convenient as that which is suggested by the four principal changes of form through which the window passed from the thirteenth to the fifteenth centuries. These changes have been illustrated by me in a work on Decorated Windows, published last year. For half a century or more after the disappearance of the circular arch, the window appeared under a form, which, from its general resemblance to a lancet in its length, breadth, and principal proportions, rather than from any uniform acuteness in the shape of its head, led to the universal application of that term to the windows of the period. This observation applies equally to the window, whether used singly, or in groups of two, three, five, or seven; and equally also to the later as to the earlier examples of the period. It is proposed, therefore, to denominate this the lancet period of Gothic architecture. Out of the practice of combining a plurality of lancets under one arch, or hood moulding, and of piercing the solid spaces that intervened between the heads of these lancets and the under side of this arch, a novel and beautiful discovery arose. This was the invention of tracery, by the adoption of which a group of several lancets under one arch was converted into a single window of several lights. For nearly three-quarters of a century after its introduction, the tracery of windows contained forms in which that simplest of all geometrical figures, the circle, was principally conspicuous; and although in the latter part of this period the circle does not obtain the same prominent place in the centre of the window, that is generally allotted to it in the earlier examples, yet the important part that it bears in the construction of the design of even the whole of their later examples, fully justifies the application of this term, already in pretty general use to this class of windows, and entitles us accordingly to call this period, by the same rule, after that figure, and, *par excellence*, the geometrical period. At the close of this period, a feature began to make its way into the subordinate parts of the tracery, which had already shown itself for some time previously in the mouldings, and which eventually exercised a most important influence on the architecture of the next half-century. This feature was the curve which mathematicians call the curve of contraflexure, and which is known amongst architecturalists as the ogee. The flowing nature of this curve imparted to the tracery a grace and an ease which the rigid outline of the circle denied it, and affords us a strong point of contrast whereby to distinguish the architecture of the two periods. The sinuosity of form which characterises the tracery, pervades also the mouldings, the carved work, and all the details of this period, and enables us to designate it appropriately as "The curvilinear period." In the latter part of this period a horizontal bar or transom as it is called, is occasionally found, crossing the mullions at right angles in the lower part of the

window. Whether this bar was introduced for the purpose of strengthening the mullions, or for the sake of proportion, it speedily grew into frequent use. At the same time also vertical lines presented themselves occasionally in the tracery; a new principle, in fact, had made its appearance, which rapidly overran not only the windows and their tracery, but the doorways, the arcades, and every part of the building. The straight line, when once introduced, quickly superseded the curved line; square panels covered the walls, angularity of form pervaded even the mouldings and minor details, and to the round finish the square edge was preferred. This was the last of the four periods of Gothic architecture.

		A.D.			Yrs.
	ROMANESQUE.				
I.	Saxon Period	from ——	... 1066	prevailed	—
II.	Norman	„ 1066	... 1145	„	79
	GOTHIC.				
III.	Transitional	„ 1145	... 1190	„	45
IV.	Lancet	„ 1190	... 1245	„	55
V.	Geometrical	„ 1245	... 1315	„	70
VI.	Curvilinear	„ 1315	... 1360	„	45
VII.	Rectilinear	„ 1360	... 1550	„	190

It is time now that we should turn our attention to Furness Abbey. Before, however, describing its present remains, it will be necessary that I should first describe to you what the usual buildings of a conventual establishment were, and more particularly those of the order to which the abbey belongs, namely, the Cistercian order. It is not unnatural to suppose that, differing as the several monastic orders did in their habits, rules, and modes of life, some indications of this difference should find their way into the architecture of their buildings. It is many years since my attention was first directed to what appeared to be the peculiarities in the architecture of the churches of the Cistercian order of monks, and having subsequently had opportunities of visiting a considerable number of the abbeys of that order both abroad and in England, I was enabled to come to the conclusion that a uniformity in the design of the buildings of that order prevailed throughout Europe, which, if it was not the result of positive regulation, was, to say the least of it, very remarkable and worthy of record. As the value of any such discovery would appear to be materially enhanced by the further discovery of any documentary or historical evidence bearing upon the point, I spared no pains in obtaining access to the early chronicles and records of the Cistercian order. In the course of this enquiry, rendered less easy from the difficulty of meeting with any of the authentic histories of the order in this country, I ascertained the important fact, that the rules which were drawn up by the early Cistercian abbots in the infancy of their order, and which were enlarged and confirmed at subsequent but still early periods, contained directions relating not only to the discipline and mode of life to be followed within the walls, but also to the choice of site, and to the architecture and form of their buildings, as well as to the degree and nature of their ornament and internal decoration. As the whole of these directions are borne out and confirmed by all the examples with which I am acquainted,—as there appears, indeed, to be scarcely a single case in which a variation from these rules occurred within the first two centuries of the existence of the order,—I conceive that so interesting a fact, established as it would appear to be by the concurrent testimony afforded by the internal evidence of the buildings themselves, and the external evidence of contemporaneous historical record, and unnoticed as I believe it hitherto to have been, is worthy of particular mention and illustration. This is not the time and place for entering into the proof of what I have asserted; but as Furness Abbey corresponds in many of these particulars with all the other large abbeys of this order, I will mention a few of them. And, first, as regards the site of a Cistercian abbey: it was ordained that they should never be built in towns, or even in hamlets, but in secluded valleys, remote from the haunts of men. All who remember any of our principal Cistercian abbeys will notice how strictly this rule is complied with,—they generally lie high up the valley, often in the narrowest part; and they appear to have usually cleared out the bottom of the valley for pasturage and cultivation, leaving the sides clothed with wood. Any one who has approached this abbey from Dalton, must have noticed how truly Cistercian this approach is. I need scarcely mention Fountains, Rievaulx, and Tintern in support of this rule, which is most stringently complied with in France and Germany; and although in England situations of this kind would be in some parts difficult to meet with, yet I know of no instance in which the rule has been departed from, or the valley deserted for the high land.—(Monasticon Cisterciense, p. 246, gen. chap., A.D. 1134, Cap. I.) Next as regards the church. They prohibited every thing that had a vaunting ambitious character. Thus towers, which abounded in the abbey churches of the Benedictines, were eschewed by the Cistercians. They permitted, indeed, a low tower at the intersection of the arms of the cross, or over the crossing, as it was called, rising one stage only above the building, but nowhere else; and the tower we now see at the west end of Furness Abbey Church stands like that at the end of the north transept of Fountains, a monument of the degeneracy, so to speak, of the order, and an example of their departure in the sixteenth century from the rules they had laid down and observed in the twelfth and thirteenth. The churches were invariably dedicated to the Virgin Mary, and to her alone. They were nearly all uniform in plan, built without exception in the form of the cross, having a nave with side aisles, north and south transepts, and choir, and having also three small chapels, forming a sort of eastern aisle to the transepts, but separated from one another commonly by a partition wall.

I now come to a very important point of their regulations: they permitted no sculptures of figures, or of the human form, no images, no carvings save that of the crucifix, no pictures, no gold ornaments, no stained glass, that is to say, of a pictorial character, and no prostration in their churches. Now, although the period in which these rules were strictly carried out was possibly short, yet there is not one of their churches of early date upon which great severity of treatment is not plainly stamped: for example, I have searched in vain for such sculptures as are here prohibited in many of the Cistercian churches of the twelfth and thirteenth centuries, whilst contemporaneous buildings of Benedictine origin abound with such carvings. Take, for example, the nearly contemporaneous buildings of Rievaulx and Whitby, situated within thirty miles of one another: in the one you will find grotesque figures, heads, and the utmost profusion of carved ornaments; in the other, extreme simplicity in these respects, numerous elegant mouldings, but no sculpture, no heads, no figures. So also in the chancel of Furness Abbey, you will find an almost entire absence of sculptured ornament, and the effect made dependent upon excellent proportion and purity of design, along with great varieties of detail. So far as regards the church, the conventual buildings were laid out with the same regularity and uniformity: of these the principal were,—1. The Chapter House, where all the business of the convent was transacted. 2. The Common Refectory and Day-room of the Monks. 3. The Kitchen. 4. The Principal Refectory. 5. The Hospitium, or Guest House. These were the most important buildings of a Cistercian monastery. There were others of less importance which I shall notice by and by; but these were always disposed round the quadrangle of the cloister in certain fixed situations, and we always know where to look for them in a ruined convent. The Chapter House point always adjoined the south transept of the church, a small apartment used as a sacristy alone intervening: it was usually the building most ornamented next the church. Next the Chapter House came a passage leading from the cloisters, and offices at the back. Next the passage came the Common Refectory, or Day-room of the Monks, a building generally of more plain character than the rest, and which extended beyond the length of the cloister to some distance, according to the number of inmates. Now, you will perhaps think that I have been describing the actual remains of Furness Abbey; the truth being that I have been describing upon the plan of what actually remains at Furness, the conventual arrangement of almost all the Cistercian abbeys with which I am acquainted. In fact, the plan of Furness is the exact counterpart of a plan which I made of the Cistercian abbey of Brombach, on the Maine, in Franconia. I will now point out which parts are still in actual existence at Furness Abbey, and which have been restored according to the approved model; and in doing so I will at the same time state their style and probable date, referring each portion to its proper period. And first in point of importance, as well as of date, comes the conventual church. The convent having been founded in the year of our Lord 1129, some time usually and naturally elapsed before the proper steps could be taken, the designs matured, and the funds collected for commencing a work of this kind; indeed, in most cases, these preliminary preparations appear to have consumed almost as much time as the building of the church itself. Judging from the style of the work, I should be disposed to say, that the church could not have been commenced before 1160. It belongs therefore to the earlier part of the Transitional period, and seems to have been entirely completed according to the original design. I have already stated, that in the earlier part of this period a remarkable rule was uniformly observed in the discrimination exercised in the use of the two forms of arch, the circular and the pointed. Here we have an excellent example of the observance of this rule, although the building was erected close upon the time when the use of the two forms of arches became indiscriminate. In this church, however, the whole of the arches of *construction* are pointed, and the whole of the arches of *decoration* are circular. There is another feature which strongly marks the exact date of this building, the use of a peculiar capital, entirely confined to this period: it consists, as usual, of a square block hollowed down to the circular shaft, the bell or neck of which is inclosed in a plain leaf, having a curled end at each corner of the capital resembling a volute. The mouldings have precisely that profile we are accustomed to look for in works of this precise date; and the same may be said of the form of the piers, which are alternately cylindrical in groups of eight. The choir is the only part of the building that has been materially altered; for although the insertion of windows of the Rectilinear period in many parts of the remains has to an inexperienced eye greatly affected the apparent character and style of the building, yet the practised archæologist will readily recognise these interpolations. In the choir, however, a great change was made in the fifteenth century, the extreme end being taken down, and the building extended considerably towards the east: this work, which includes an originally fine east window, now gone, two lofty side windows, and some elaborate and beautiful sedilia, belongs entirely to the Rectilinear period. Passing now into the south transept, we first recognise the accustomed flight of stairs which led from the dormitory of the monks to the church, which they made use of at their different hours of service during the night, and ascending these we shall find ourselves close to the scriptorium, or library, over the Chapter House; and, advancing still further, we shall find ourselves in the dormitory—that is, we should have done, had there been a floor, which there is not: we must therefore be content to restore the vaulting of the common refectory, on which that floor rested, in imagination, and descend at once into the cloister quadrangle. We first come to the Chapter House, which we approach through a fine vestibule, having a circular archway for its entrance, on each side of which are two similar circular arches, one opening to the sacristy, and the other to a vaulted apartment very commonly found in this situation, and which, till we find a better destination for it, we will call a penitential cell, which I believe is what it was. The Chapter House and vestibule belong to the very best time of the Lancet period, and are very elegant specimens of this work. We next come to the common refectory and dormitory over it, which are plainer examples of the same period: still adhering to the cloister quadrangle, and leaving the remains at the end of the common refectory for subsequent examination, we must turn to complete our survey of the quadrangle of this once magnificent series of buildings, with little else left us but speculation and regret. From what we have seen of the size and character of

the common refectory, we cannot doubt but the principal refectory must have been in a style of unusual magnificence, and the hospitium, running from the south side of the church in a southerly direction, must have been of unusual extent; indeed, the foundations of both buildings, which were distinctly traced out at my instance, by Mr. Beck, the careful and diligent historian of this district, prove this beyond a doubt: all that remains either of them or the cloisters themselves, are the few remains of the hospitium attached to the south wall of the church, consisting of the shafts and part of the capitals of the vaulting.

EDMUND SHARPE.

LIGHT, AIR, AND WATER OF THE POOR.

PUBLIC attention has been stedfastly fixed on the sanitary condition of the humbler classes, and inquiries have been directed into the haunts of poverty, which are but too frequently the purlieus of filth. Possibly the origin of this movement is not deducible from that pure benevolence which is founded on the basis of Christian charity, and is rather owing to that tendency to self-preservation which is the instinct of nature, seeing that the recent scourge of the cholera has stimulated the sympathies of the higher classes to a more active regard for the cleanliness, comfort, and health of their toiling neighbours. Whatever the motive may be, the object and end are good, and if the scourge of epidemic persuade men to a more elevated mode of life, to the practice of fraternal amenities, and to the amelioration of the mass of mankind, it boots not to inquire too scrupulously.

Before the lethiferous year of contagion, who thought of prying into the by-lanes, courts, and alleys of the metropolis, or what philanthropist deviated from the Courtly quarters—the parks, squares, and broadways of fashionable *rectitude?*

It has now become fashionable to be amongst eleemosynary committees, and it is well it is so, for the lot of suffering and long-neglected humanity is like to profit by this new and well-timed bias of aristocratic feeling or affectation.

The first thought of awakened terror was the wish to furnish every abode of the destitute with a sufficiency of *water*, the second to provide sewerage, and the third, better regulated apartments.

Several model lodging-houses have been also established, and on this theme, some two years back, I furnished THE BUILDER with remarks on their ventilation and arrangement. Since then five or six have been established, and in these some 2,000 or 3,000 of the more independent of artisans, mechanics, and labourers (*cælibates*) have been and are accommodated. This is a step in advance, and, no doubt, will in time, by the teaching of example, greatly improve the mode of construction in erecting houses for the poor; but what is the amount of benefit conferred on the existing swollen population of the slums of London, or what proportion does this section of 3,000 souls bear to the 800,000 who yet pine in indigence, squalor, pestilence, and darkness in the rookeries *within every district* of the bills of mortality.

Much parade has been made by sewer authorities of their drainage, much by the water companies of the increased flow of water; but there are in every quarter of the town, city, and suburbs crowded dwellings where there is as yet no sewerage, and in which the privies exhale miasmata sufficient to originate again, in sultry weather, and in certain stagnant conditions of the atmosphere, pestilence as lethiferous as that from which, under Providence, we have been yet preserved.

I will not particularize neighbourhoods, for it might be invidious and prejudicial to the interests of householders, where, lately, no one could walk without being disgusted by the emanations from sewers or *reservoirs;* but I will undertake to lead a sanitary commissioner, or any subordinate who may be delegated to accompany me, through any parish in London, and to convince him by the most forcible evidence, by an appeal to his senses (those of smell, aye, and of taste), that foul and tainted air, the origin of all epidemics, is at large and poisoning the breath of life: for several days last week it was palpable in most parts of the town, and even in open and opulent suburbs, where, on the stagnant air, a heavy reek of pestilence issued from the constricted lanes, doing the work of contagion.

This comes from the numerous open privies, in a heavy sickening vapour, which, for want of buoyancy rolls along the surface and extends far beyond the region of its generation.

In confined rooms, occupied each on an average by three persons, the effect of stinted oxygen is visible in the wan features and gaunt frames of the inmates, who, in addition to this visitation, have to endure a short allowance of light through *one window* (without any back current or ventilation), and generally a scant supply of *bad water:* the wooden tubs in which this last is meted, being devoid of waste pipes, are conservative of epidermia and filth: thus the three most vital elements—light, air, and water—are withheld from that class of the community which most needs their refreshing influence, when retired to fitful rest after a day of toil.

It often occurred to me that the maudlin sympathies of platform orators when treating of the sanitary question savoured strongly of rose-water and Persian carpets. Noble Lords who have only *heard of* such privations, speak poetically of the benefits of model lodging-houses: let them visit the lairs of want, and carry sanitary reform into practical utility: let them ameliorate those evils where they have long existed—in the poor man's home, be it chamber or cottage. A noble sympathiser, on inspecting the hovel of an Irish labourer in St. Giles's, asked if he did not *filter* his water—"An' sure, yer honour," replied Paddy, "the company supplies it ready filthered from the Thames: the childer don't drink it anyhow, and I might as well take to the pump as axe the turncock to draw it mild: maybe it's whisky it wants!" His Lordship took the hint.

In France the President of the republic has taken up the plan of improving the dwellings of the poor. Our Commissioners are well paid for their office, and should actively attend to the speedy redress of these wide-spread evils. Perhaps it might be "*infra dig.*" to personally inspect immundities: if so, some operative should be enjoined to do the offices of visitation and inspection. The Roman who sought official honours was made Ædile, or public scavenger in derision; he, however, accepted the post, conferred in contempt, and made the office important and respectable by the expurgation of Rome.

Defective sewerage is the first evil, bad and scant water the second, insufficient light and ventilation the third; these demand speedy correction. The expense will be amply requited in the increased energies of the producing classes, the care and trouble in the improved health of the community.

QUONDAM.

NOTES OF BUILDING WORKS IN IRELAND.

A NEW church has just been completed at Sidney-parade, Dublin, on the estate and at the cost of the Honourable Sidney Herbert. The total dimensions are 98 feet 2 inches long, by 46 feet 6 inches wide; height to level of wall-plate of aisles 15 feet, to ridge of roof 22 feet, to level of wall-plate of clerestory 28 feet 6 inches, to ridge of roof 42 feet. On the western elevation is a tower 16 feet 6 inches square, and 75 feet high, with a circular turret, attached at the angle, 2 feet 8 inches diameter, and 37 feet high, perforated with semi-circular headed openings to admit light. A winding staircase, leading to the organ loft, is constructed therein. In this front is the entrance to nave, by a semi-circular headed ope 4 feet wide, 7 feet 6 inches high, with clustered Norman columns, and cut stone dressings. Above this is a gable perforated with a central window 11 feet 6 inches high, by 2 feet 6 inches wide, with intersecting Norman arches springing from columns at each side. The large tower, which is decorated in a similar manner, is surmounted by a conical stone roof 14 feet 9 inches high, having grotesque figures at the angles. The flanks are perforated with five circular-headed windows, with cut stone dressings; those of aisles 6 feet high, by 2 feet wide, with a similar arrangement in clerestory. On the east elevation is the chancel 25 feet 3 inches long, by 17 feet wide, with a semi-circular absis 17 feet diameter. This absis has five windows and buttresses similar to those on flanks,—height to level of wall-plate 22 feet 6 inches, to ridge of roof 37 feet. The walls of the church are 2 feet thick, built of angular granite rubble; all the dressings throughout are of Caen stone. Total cost, 6,000*l.* Mr. Ferrey, of London, is the architect. Mr. Darby, of Dublin, architect, superintended erection. Mr. George Farrell, builder. Style early Norman.

The directors of the Bank of Ireland are receiving tenders for the erection of a branch Bank at Maryborough, according to drawings by Mr. Halpin, architect. Cost to be about 1,600*l.*

The Poor-law Commissioners are about erecting a new work-house at Glyn, county of Limerick, according to plans by their architect, Mr. George Wilkinson, and have advertised for tenders for same.

There is a new mart erecting at Drogheda, the designs having been furnished by Mr. Wm. F. Caldbeck, architect. The style is Italian; the cost, 2,000*l.*

A new Roman Catholic Chapel is in progress of erection at James-street, Dublin. The plan is rectangular: length of nave to chancel, 130 feet, by 60 feet wide. A plinth, 3 feet 6 inches high, surrounds the building. The front elevation has three entrances, with windows over centre door 6 feet wide, and 14 feet high, to soffit of arch; side doors 5 feet wide, 13 feet high, with label mouldings, clustered columns, and foliaged caps; centre window, 7 feet 6 inches wide, 23 feet high; side windows, 4 feet 6 inches by 15 feet 6 inches; height to castellated parapet of tower, 111 feet 6 inches. From this level rises a spire 86 feet high, double angle buttresses at each side of tower, 4 feet 6 inches wide, with crocketed pinnacles, rising 19 feet above castellated parapet. The side elevation is perforated with nine lancet windows, with label mouldings in clerestory, and eight in aisles. The buttresses between clerestory windows are pinnacled; those of aisles plain angular-headed. The chancel is 18 feet 7 inches by 28 feet 5 inches; has a window 15 feet wide, 34 feet high, and five bays, with tracery. Height to level of wall plate—of aisles, 28 feet; to ridge of roof, 35 feet; to level of wall plate of roof over nave, 53 feet 6 inches; to ridge, 65 feet: walls, 2 feet 9 inches thick. The side aisles are separated from nave by a series of lancet arches, springing from clustered columns, having foliaged caps. Between the lower story and clerestory is a triforium: the ceiling to be groined and bossed. All the principal windows to be decorated with stained glass. Rear and side elevations are punched and drafted; front, sparrow picked; dressings of Tullamore limestone. This chapel has been designed to accommodate 2,500 persons: is being erected by voluntary contributions and bequests. The roof over nave is being laid; tower is at present carried up to a height of 70 feet. Total cost will be 20,000*l.* Style, Gothic of the Middle period. Mr. P. Byrne, architect; Messrs. Meares and M'Kay, builders.

The Alliance Gas Company are erecting extensive stores at Sir John Rogerson's quay, consisting of retort-house, coal stores, &c.; cost will be about 3,000*l.* Mr. Byrne is the architect.

Viaduct over the Boyne.—The works on the Dundalk and Belfast Junction Railway line are progressing rapidly. The viaduct over the Boyne has been in course of erection since January last, but it will take about eighteen months to complete it. By this viaduct, which is of enormous strength and extent, the railway crosses the defile. On each side the embankments are of considerable elevation. It will consist of eighteen semi-circular arches, each sixty feet in span, and will rest on seventeen piers exclusive of the abutments. Those piers are of a very strong description. They are all founded on solid rock, some of them, and the north abutment, at a depth of thirty to forty feet below the surface of the earth. They are constructed of blocks of granite (rock ashlar work), from a ton to two tons weight each, and of the hardest and densest quality; they have an appearance of great strength and stability. The height of the arches over the ravine will be 140 feet above the bottom, and in addition to this there will be a strong stone parapet about 4 feet high. The lowest arch will be about

70 feet above the surface of the earth. The extreme length of the viaduct will be about 1,400 feet. The largest piers rise up from the bottom and sides of the ravine. The works are contracted for by Messrs. Killen and Moore. There is nothing in Ireland to be compared to it for size.

NOTES IN THE PROVINCES.

THE Leicester Improvement Committee are about to have the Exchange at Leicester taken down, and the buttery and poultry market-house, planned by Messrs. Flint and Wicks, of Leicester, architects, erected.——All Saints church, Thurleston, has undergone some extensive alterations, and been provided with a large addition to its accommodation by means of uniform open sittings. The east window has been filled with stained glass by Wailes. The entire work has been executed from designs by the late Mr. Stephen Fry, architect. ——It is proposed to erect a new church at Eling. Five hundred pounds have been offered to a building-fund by Miss Bourne.—— Schools are about to be erected at the New Forest union workhouse, Hants.——The Cirencester theatre has been sold by auction for 350*l.* It was built by tontine in 1796, and *produced* Incledon. It is now to be converted into a brewhouse.——The foundation-stone of the intended infirmary and dispensary at Torquay was laid on Saturday week.——Nearly 200 new houses are in course of erection at Plymouth, besides those in the suburbs.—— The *Liverpool Times* states that fourteen flag-stones, each 13 feet by 10, and weighing upwards of five tons, have been brought by canal, from Owram, near Halifax, in Yorkshire, for the east portico of St. George's Hall, where workmen are laying the foundation for the grand flights of steps to constitute the approaches to that end of this noble building. Each stone is about seven inches in thickness, and was with difficulty drawn from St. George's Dock to its final resting-place by three stout horses.——York Cathedral is undergoing inspection, with a view to repairing injuries lately received. —— The new Independent church at Scarborough was opened on Tuesday week. It is in the Early Decorated style, with geometrical tracery, and is built of Whitby stone, with quoins and dressings of Cloughton Moor stone. The roof is covered with green Westmoreland slates. The plan consists of a nave and transepts, with recessed organ gallery behind the pulpit, and tower at the S.W. angle, the stair turret crowned with small leaden spire and gilt vane. The principal entrance is on the south side, by a moulded and crocketed doorway. The principals of the roof rest on carved corbels, springing from internal piers, forming on each side three shallow chapels, each having a three-light window and high pitched gable. There are galleries at south end of nave and east and west transepts, connected by shallow galleries running down the east and west sides, and having carved open front. The woodwork is stained and varnished; the roof, which is open, being coloured ultramarine between the rafters. The north window is to be filled with stained glass by Messrs. Forrest and Burnby of Liverpool. The church is lighted principally by two gas coronæ, pendant from the roof, with stems and bands of ultramarine. The whole has been carried out from designs by Mr. Raffles Brown, of Liverpool, architect: carving executed by Mr. Rossiter, of Liverpool. Length within walls ninety feet, breadth between transepts sixty-two feet, breadth of nave thirty-five feet: seats 1,100: cost, exclusive of ground, 3,320*l.*—— The National Provincial Bank of England Building at Darlington has been rebuilt, and appears to be rather a stylish sort of edifice for such a place as Darlington. Its site is a conspicuous one in High-row. The exterior is an Astylar composition of the Italian Palazzo style, faced with stone, and consisting of three stories above a sunk basement; the windows of ground-floor are arched, the key-stones being enriched with masks or heads. The windows of chamber story have architraves and enriched cornice, and the attic windows have architraves with slightly curved heads and key-stones. A large and ornate cornice terminates the whole. The architectural department was under the superintendence of Mr. John Middleton.—— The foundation-stone of the new church of Holy Trinity, Hartlepool, was laid on 22nd ult. The style is middle pointed. The plan consists of chancel 36 feet by 21 feet 6 inches, with vestry and organ chamber at north side; nave 84 by 24 feet; north and south aisles, each 84 by 13 feet; and north and south porches. The west wall will be terminated for the present by a bell gable for two bells, and is to admit of a tower being added. The roofs will all be open, those of nave and chancel with collars and curved bodies. The nave and aisles will have open seats of simple character. The pulpit will be a carved one of Caen stone. The chancel is to have oak stalls with panelled fronts and standards with poppy-heads. The church is to accommodate 770 persons, 514 free. Mr. John Middleton, of Darlington, is the architect, and Mr. J. Mathison, of South Shields, the contractor.—— The Maryport Gas Light Company have just announced a further reduction in the price of gas at that place from 5*s.* to 4*s.* 2*d.* per 1,000 feet. —— St. Margaret's Chapel, Edinburgh Castle, is undergoing some alterations with a view to its restoration. Several of the ancient windows are now opened, and filled with stained glass, the work of Messrs. Ballantine and Allan.——On Friday week an influential meeting has held in Glasgow to promote the erection of an equestrian statue of her Majesty in that city. Alison, the historian, presided, and eloquently descanted on the personal graces of her Majesty's mind and form; observing, also, that, on the erection of the statue, "Glasgow would have the singular felicity of possessing the first equestrian statue of a woman in Great Britain." Twenty subscriptions of 100*l.* each have been readily obtained, and one of 200*l.* Successful endeavours are now being made to obtain smaller sums, several of 50*l.* and under having been already also secured.——The works for superseding canal locks in drawing up boats at the Blackhill Locks on the Forth and Clyde Canal have now been brought to a completion, and the new process was put to the test on Saturday in week before last. The result was satisfactory, three boats having been drawn up in less than five minutes, whilst to have made them pass through the locks would have taken fully half an hour.

CHETHAM COLLEGE, MANCHESTER.

AMONGST the places visited by the Archæological Association at Manchester was Chetham College, where they were accompanied by Mr. Gregan, and had the advantage of some notes from him on the subject. Humfrey Chetham spent his later years in retirement at his country residence, Clayton Hall. On the 12th of October, 1653, he died, being then in the seventy-third year of his age; and he was buried in the Lady Chapel of the Collegiate Church, now called "The Chetham Chapel." His crowning act was the bequeathing of 7,000*l.* for the purchase of an estate, the proceeds of which were to be devoted for ever to the maintenance and education of forty poor boys, from the age of six to fourteen years; and on leaving the hospital, they were to be apprenticed or otherwise provided for. Another bequest was 1,000*l.* for the purchase of books, and 100*l.* for the purchase of a building to contain them, they being for the free and unrestricted use of the public for ever. A further sum of 2,000*l.* was directed to be devoted to the continual enlargement of the library. The main body of the present building was probably erected during the lifetime of Huntington, the first warden of the college; the money for the purpose having been left by Thomas Lord de la Warre, the founder of the college. Huntington's part of the building comprises the quadrangle and the small staircase at the south-east corner; and Mr. Gregan was inclined to consider the hall and the room adjoining it on the south, as belonging to the earlier building, and to refer them to the time of Henry VI. The later parts of the building consist of the cloister surrounding the quadrangle, with the line of offices extending eastward along the bank of the river Irk, to the gateway; and these seemed to belong to the time of Henry VIII. or certainly not earlier than the end of the reign of Henry VII. The warden and fellows occupied the buildings until 1547 (1st Edward VI.) when the college was dissolved; they were then conveyed by the king to Lord Derby, whose family retained them until the time of the civil war, when they were seized on behalf of the Parliament; and ultimately purchased by Chetham's executors. The cloister is very peculiar, inasmuch as it has two stories; the only other instance of the kind being at St. Stephen's, in Westminster.

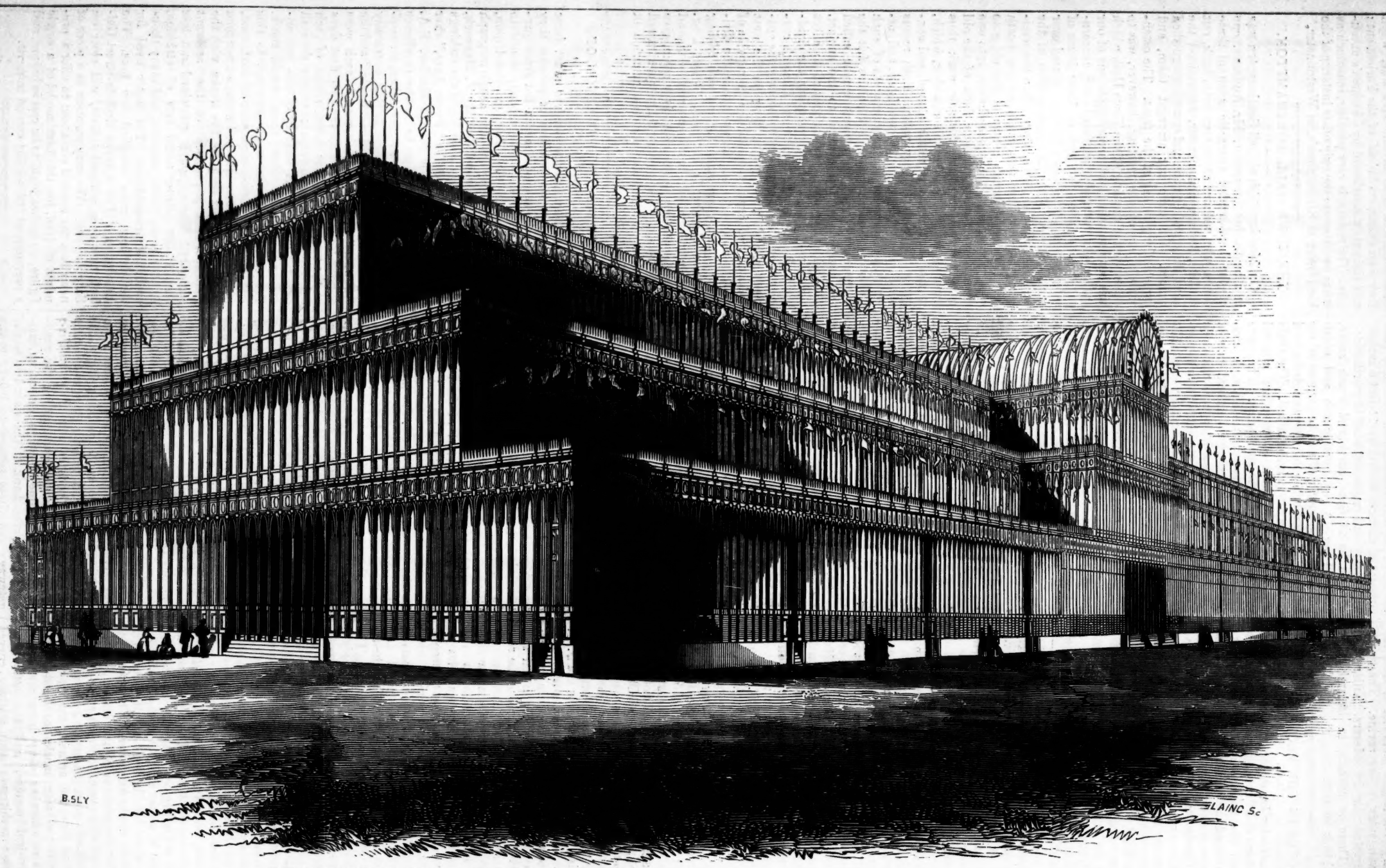
THE TOWN HALL, SOUTHAMPTON.

ON Monday, 26th ult., all Southampton was in a bustle, for the mayor, Mr. Andrews, one of the hard-headed energetic men of these times, who, without extraneous help, hack, out of Life, fortune and honour, entertained the Lord Mayor of London and some distinguished guests. We were not amongst them, and have nothing to say of the feast. The ostensible object of the meeting, however, was to celebrate the opening of the Town Hall, which has been enlarged, and according to one of our correspondents, much improved; and, concerning this, we may give two or three items of information. The Town Hall is situated over the Bar-gate, in the Norman portion of the building. In the 15th century, when the semi-octagonal addition was made on the north front, the tower in the centre of the old gate was removed, and the space thrown into one room, but the outer northern flank of the old gate was left standing, the new work thus forming an additional small chamber, which, in modern times, was much altered, and converted into a grand jury room. Both rooms were inconvenient, low, ill-ventilated, and utterly inadequate for the requirements of such a town as Southampton. All parties felt the inconvenience, and the present mayor called the attention of the council to the subject. Mr. Elliott, architect, was appointed to effect the enlargement, and by removing the dividing wall between the twelfth and fifteenth century portions of the gate, thus forming one spacious chamber, and by building on the west flank an additional room, which is capable of being thrown into the former room, the division between them being formed with folding doors, a chamber is obtained, 74 feet long. A large lantern-light in the sessions room, and a smaller lantern in the grand jury room, give light and air. The roofs or ceilings are framed in timber. The works have been executed in nine weeks, at a cost of 700*l.*

NEW WORKS BY ART-UNION OF LONDON.

SOME of our London readers must have been amused by the numbers of persons they met last week with a roll and a flat green parcel. These were the works recently issued to the members of the London Art-Union, namely, an engraving by the anaglyptograph from the prize bas relief by Mr. J. Hancock, "The Entry into Jerusalem," and the etchings by Mr. E. Goodall, of the "Seven Ages," after the original designs by Mr. D. Maclise, R.A. There is but one opinion as to the excellence of both works, which, we may notice, are supplementary, the subscribers having previously received "Sabrina" and the "Smile" and the "Frown." About 1,000 copies of each were applied for and received in the two first days of the week, and about 5,000 copies of each delivered simultaneously on the same days all over the country. A delivery of this sort involves more work than some would think. For example: in the week previous to this last issue, 460 parcels were sent off east, west, north, and south, which had occupied two men from eight to six daily for five weeks with the constant superintendence of the assistant secretary. These parcels contained not less than 10,000 prints, 6,000 sets of etchings, 6,000 reports, 7,000 circulars, and many thousands of prospectuses. The paper used for the etchings alone weighed two tons. The Exhibition of Prizes at the Suffolk-street Gallery, now open without tickets, will close on Saturday 7th. We may mention as a piece of news that the council are about to offer a premium of 100*l.* for the best model of a single figure, 20 inches high, to be cast in bronze, and a premium of 50*l.* for the second in merit.

PLANS FOR IMPROVEMENT OF TOWN OF LIVERPOOL.—Sixteen plans have been given in. After the decision of the committee, it is said, they will be open to public inspection.



PERSPECTIVE VIEW OF THE PROPOSED BUILDING FOR INTERNATIONAL EXHIBITION.*

DESIGNED BY MR. PAXTON.

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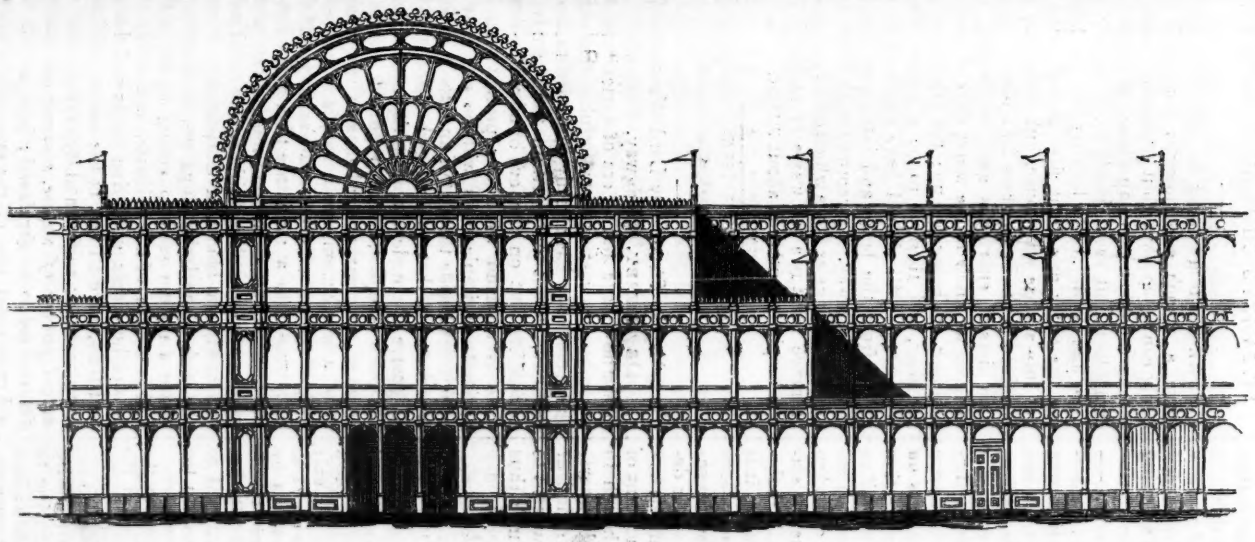
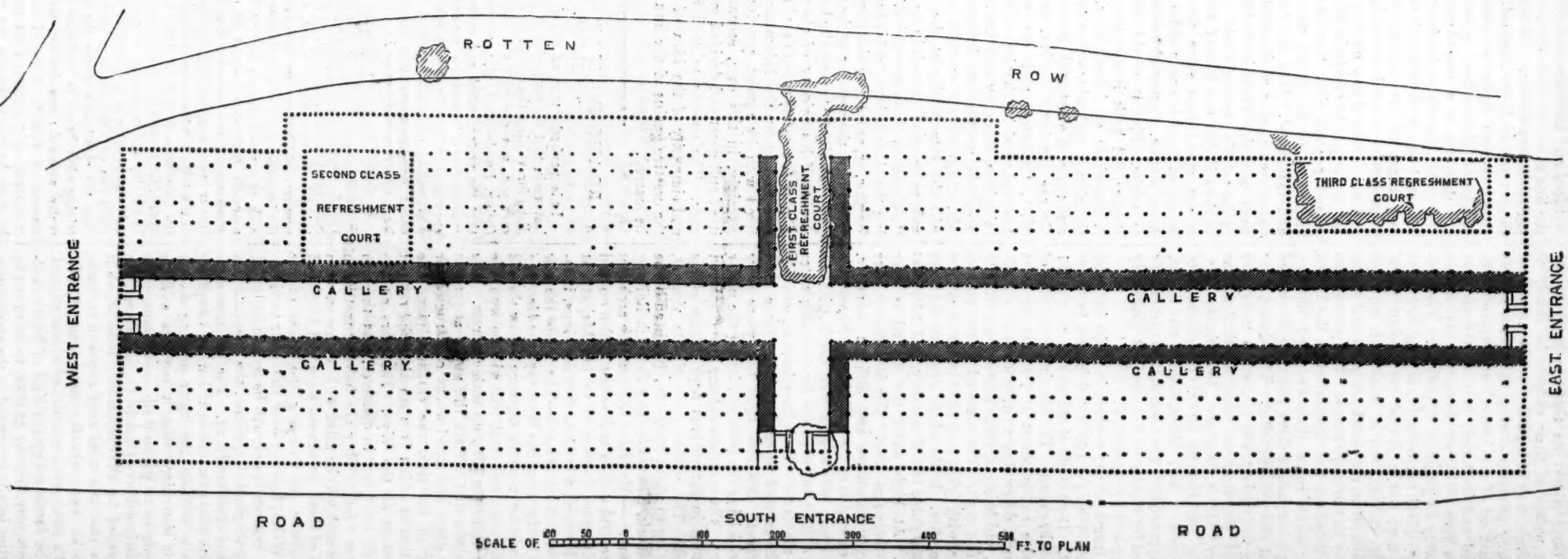


ELEVATION OF TRANSEPT.



GROUND PLAN.

[* See page 421 in our present number.

RAILWAY JOTTINGS.

THE opening and naming of "the Royal Border Bridge," at Berwick, by her Majesty and Prince Albert on their progress to the ancient palace of their ancestorial family at Edinburgh, may be regarded as the main event in railway progress during the week, and as "the last act of the Union" of England with Scotland and its kingly race, as courtly contractors have *archly* yet decorously styled it in the flowery language of hyperbole. The construction of the narrow old bridge of James the First's time was a *job* of twenty-four years' standing, carried out, it is alleged, with the mere interest on the instalments prepaid by the Treasury to the contractors. The present imposing structure was thrown across the Tweed in not much more than as many months, although it contains three times the amount of material and workmanship. The Queen, after viewing the viaduct, was pleased to testify her sense of the eminent scientific skill of the engineer, Mr. Stephenson, by offering him, through Sir George Grey, the honour of knighthood. Mr. Stephenson, no doubt, fully appreciated the honour so gracefully tendered by royalty to science, but gratefully and respectfully declined it.

The length of the viaduct is 2,160 feet, and its greatest height 126 feet 6 inches to top of parapet. It consists of 26 arches, each of 61 feet 6 inches span. The remainder consists of a massive embankment of 700,000 yards of earthwork, describing a curve towards Tweedmouth, and being at some places from sixty to eighty feet high. The material of the viaduct is stone, with brick in cement in the inner part of the arches. In the whole structure there are 1,250,000 cubic feet of masonry, and 2,500,000 bricks. At high water the Tweed is here twenty-three feet deep. The foundations were of a very expensive and difficult character. In the execution of the coffer-dams, Nasmyth's patent steam pile-engine was used, with an engine of fifty-horse power for pumping water out of the dams. Piles have been extensively used, the ground principally being loose sand and gravel. No less than two years were spent in driving the piles and laying the under masonry. The contractor at one time employed 2,000 men in the various departments of his contract. The entire cost of the viaduct, amounting to about 200,000*l.*, has been borne by the York, Newcastle, and Berwick Railway Company.——Mr. John Dobson, the architect of the central station at Newcastle, also opened by the Queen, forwarded to her Majesty, at Castle Howard, a book of five drawings, illustrative of that building——The site of the new railway bridge over the Wye, says the *Hereford Times*, will be a short distance below the old one, and the staple material will be iron, the piers of iron tube filled up with concrete. The first objects that attract the notice at present are the great and novel works constructed for sinking in the river the cast-iron piers, the foundation of which is upon the solid rock at the bottom of the Wye. The piers on the land side are 6 feet in diameter, and those in the water 8 feet. They are bolted together in sections and will be filled with concrete. On the top of these iron-cased piers will be placed the roadway for carrying the trains of the South Wales Railway over the river to Gloucester; but whether it will be by a tube, or by a partly suspended medium, the spectator has no means of ascertaining. The greatest difficulty in this new construction at Chepstow appears to be from the water pouring so fast into the iron piers that it requires a large steam-engine to pump it up.——A prospectus of the Briton Ferry (Neath) Docks scheme has been issued by the promoters, from which it appears that the total sum required to make the docks and wharfs, according to Mr. Brunel's estimate is 45,000*l.* of which 10,000*l.* are to be furnished by the Vale of Neath Railway Company, leaving 35,000*l.* to be raised by the parties locally interested in the speculation. The Vale of Neath Railway works are, it is said to be now prosecuted with renewed vigour. In a short time ten miles will be ready for the laying of the permanent way. Mr. G. Hennett, of Bristol, has taken the contract for making the bridges over the Neath canal and Neath river; also for the erection of the viaduct near Cadoxton. It is in contemplation by the propietors of the Momouth and Forest of Dean tramroad to convert their line into a locomotive one.——Papers, it is said, have been lodged to file an injunction to prevent the Dover Company from opening the Ashford and Hastings line, on the ground that the line as constructed does not agree with the parliamentary section. On the other hand, an injunction has been obtained, prohibiting the company from paying any more dividend until said line shall have been opened. The company are therefore in a true American "fix."——Government is reported to have made the long-expected grant of 100,000*l.* to the Waterford and Limerick for constructing the line to Waterford.——An iron bridge on the Erie Railway broke down on the 31st July last, under the weight of a train with 113 oxen and some sheep and pigs. Several men were killed, and many of the cattle were horribly gored and massacred. Had the train been one of passengers a scene of dreadful slaughter must have ensued. There is something wonderful in the narrow escapes made by human beings in the still frequent falls of railway works. It is not many days since an equally narrow escape of hundreds occurred at the Bricklayers' Arms station. Iron-work seems to be all going to sticks. Pity it would not, in many instances, fall back into stones and bricks.——A committee of dukes, lords, M.Ps., professional men, and others have taken in hand the realization of a national monument to the late George Stephenson,—Mr. George Carr Glyn, M.P., treasurer, and the secretary to the Institution of Mechanical Engineeers at Birmingham, honorary secretary. The committee base their unquestionable hopes of success on Mr. Stephenson's exertions "in connection with the introduction of the safety lamp," as well as on (and, indeed, in precedence to) his "elaboration of the locomotive." But, considering the all-sufficiency of his renown as the elaborator, or, as we long since equivalently designated him, the maturer of the locomotive, it is perhaps a pity that many who have conscientious doubts of his priority of claim to the invention of the safety-lamp should have their desire to honour the locomotive maturer interfered with by a moot question on a point of certainly, in this case, secondary, though in itself still great and decided merit and importance. The success as well as the grandeur and simplicity of the idea of a monument to the creative genius of the iron horse may thus be marred.

RE-ASSESSMENT OF ST. LUKE'S, CHELSEA.

IT is perfectly true, as stated in your paper of last week, that the resolution of the board of guardians for valuing the parish by a paid non-resident surveyor, was carried by a majority of one only (being, I understand, nine to eight); it is also true that the vestry, called and crammed as it was by "discontents," passed a resolution against such appointment by a large majority (117 to 27); but what weight or consideration is to be attached to either the large minority in the one case or to the large majority in the other? I think none.

It should be known that the opponents to the measure both at the board of guardians and at the vestry, are men having considerable property under compound assessment (and, as it is believed to be) below its proper value. These, with others, having property which they dare not, evidently, subject to the impartial hand of a professional man, to be dealt with as the law directs and as the case demands, naturally feel deep interest in opposing such an arrangement, well knowing that he would show no favour to any one, but do full justice to all. Nothing of the sort, it is very easy to imagine, can be done, if the guardians, or as is proposed a committee of the vestry, are to have the re-assessing; and this too, *not by visiting and inspecting the property*, which is the only right course to be pursued, but by sitting in a room two or three times a week, and then going over the rate-books under the pretence of ascertaining what house *is* and what house is *not* correctly assessed: can justice under such circumstances be done? Echo, I think, will answer "*impossible.*" Justice, I am convinced, can only be done by employing, as the guardians purpose doing, a parochial and properly paid surveyor. Remonstrances against this, it appears, have been forwarded to the Poor Law Board from the minority of the guardians and from the majority of the vestry; but representations from such quarters will not, I trust, have any influence with the Poor Law Commissioners; they, and they alone, have now to decide the matter, and acting with right judgment, soon I hope to hear that the mandate has been issued forth to the guardians to "re-assess the parish," which no unprejudiced man, I am sure, will deny will be for the parish benefit.

It is absurd what expedients men sometimes have recourse to to obtain their own ends. In the present case the doctrine laid down by the compounders and their friends is, that none but persons such as themselves are competent to revise the assessment; that two or three years will be required to do it in; that the cost of it will be 3,000*l.* or 4,000*l.*; and next, that the appeals will be endless, and consequently the expense to the parish endless. It is unnecessary to tell *you*, but it may perhaps *not* be unnecessary to inform the ratepayers of Chelsea, and the ratepayers of other parishes, who may wish to have their parishes re-assessed, that all this is a wanton imposition on the credulity of those to whom it is addressed. Just the reverse is the case. Competent men can be found who will do the work in eight months or less for the sum of 525*l.*, and the parish guaranteed from all expenses attending any appeals. I enclose my name.

A RATEPAYER OF CHELSEA.

ST. JAMES'S CHURCH, HOLLOWAY.

SOME works are going on here which would drive a stanch ecclesiologist mad, and certainly can be anything but satisfactory even to those who attach less importance to forms and symbolism, but seek simply for propriety, fitness, and beauty. On looking into the building the other day we at first thought we had got into a huge warehouse, but ultimately determined it was in progress for a concert-room. Two tiers of enormous galleries, beating any of those we know of the worst days of church-building, are being put up; the organ is above the altar, and there is to be a gallery above the organ. We should have expected better things from the large and intelligent population of Holloway. To reproduce in stone, too, such mouldings as those which *adorn* the classic entrance front is a sad waste of money. The contemplated outlay is about 3,000*l.*

Books.

Ploughing by Steam. By Lord WILLOUGHBY DE ERESBY. Ridgway, Piccadilly.

We do believe that an era of agricultural development, as vast and wonderful as that which the present age has already witnessed in manufactures, is not only within the bounds of possibility, but on the eve of advent,—that a time is at hand when our present primitive agricultural implements will be put away as curiosities beside the distaff and the spinning-wheel,—and that the alleged discovery by Daguerre of a mode of rearing three-year plants in three months,—the reported power of some of our market-gardeners to rear a salad (like a mushroom) in a single night,—the alleged power of the Japanese to dwarf the lofty pine into a miniature tree, a few inches only in height,—the traditional story of the monks of Glastonbury Abbey, who could make the hawthorn bloom at Christmas,—or even the trick of the Indian jugglers, who appear to cause a mango seed to spring up out of the soil in course of a few hours, and before the eyes of hundreds, unfolding leaves and flowers and fruit,—are all but, at the worst, vaticinary imaginings, or rudimental typifying *ideas, of actual powers of nature, scarcely less wonderful, and yet to be developed;* just as was the old traditional idea of the magnetic telegraph of separated friends, with its needles and alphabets, but without any record of *its* invisible connecting wire,—alone wanting to reduce it all to credibility.

Believing, at all events, as we decidedly do, that a great era of agricultural development is at hand, when even the steam-plough, as it at present exists, may be a rude implement, it is interesting, in such belief, to witness just such beginnings of *this* anticipated era, as were the first steam-engines, or the first spinning and weaving machines, in manufacture—or the locomotive with legs, like a horse, in the railway system. The steam-plough may, even yet, be just such an implement, with relation to agriculture; but certainly, whatever be the upshot, or whatever be the merits of this particular invention, agriculturists are deeply indebted to Lord Willoughby d'Eresby, for his continued endeavours to elevate their position, and improve the means of *their* peculiar *manufactures.*

The steam-plough described and illustrated

in the present pamphlet, consists, as his lordship states, of—

"A locomotive engine, weighing 3½ tons, and of 26-horse power, designed by Mr. Gooch. It has a double capstan attached. The engine moves across the centre of the field on a light portable railway. The ploughs advance and recede on either side of the railway, at right angles to it. The plough employed consists of four ordinary, and the like number of subsoil ploughs, fixed in a frame; it is directed by a person standing upon a small platform. Two such ploughs, one on either side of the railway, alternately advance and recede; the advancing plough working, the other idle until it regains its proper position for ploughing the next four furrows. The ploughs are attached to an endless chain, 150 yards in length. Provision is made in case they strike against any impediment. Such a machine would perform the work usually done by 16 ploughs, driven by as many men, and drawn by 32 horses. It would save the labour of 31 horses and eight men;" and yet, in saving labour, would, as machinery always does, provide additional means of productive employment.

An Introduction to the Study of Gothic Architecture. Oxford and London: J. H. Parker. THOSE who desire to get without trouble a general idea of the progress of Gothic architecture will find this little book useful. It was originally written as part of a series of elementary lectures, recommended by the committee of the Oxford Architectural Society to be delivered to the junior members of the society in 1849, and being thought useful, Mr. Parker was requested to publish it. It is largely illustrated and nicely printed. The last chapter is on French Gothic, and its comparative progress, a subject which well deserves to be further investigated. Some of the French antiquaries have thrown difficulties in the way by claiming for their buildings much earlier date than can be justified. It would seem, however, that they are now admitting their error.

Review of Report of General Board of Health on Metropolitan Water Supply. By S. C. HOMERSHAM, C.E. Weale, High Holborn.

This is virtually a pleading against the Board of Health Report and in favour of the Watford Scheme for collecting water from the chalk strata through springs above the level of London: indeed, the review is in the form of a report to the directors of that scheme. It contains a good deal of interesting matter, however, and we are glad to see that the rain-water scheme of the Board of Health appears to have at least strengthened the disposition of the supporters of other schemes to adopt efficient means of softening, and, where necessary, purifying the hard-water of the metropolitan districts. To this end, the process contemplated by Mr. Homersham, as engineer of the Watford Scheme, is one also recommended by the Board of Health, and generally received with favour, namely, Professor Clark's, of Aberdeen. "The Watford spring-water," he says, "as explained in my report to you dated January last, may be reduced by Clark's process (from 18 degrees and upwards according to Dr. Lyon Playfair) to 3½ degrees of hardness, and without having pledged you to carry out this process [they ought to be pledged to adopt *some* process, however] provision was made in the plans deposited in November, 1849, to procure an advantageous site for erecting works necessary for that purpose, and ever since last autumn I have been in communication with Professor Clark," &c. The process in question, as our readers may remember, consists simply in the precipitation of the hardening *bi*carbonate of lime by the addition of quick lime which converts it into *insoluble* carbonate of lime, at the same time defecating the water from animal and vegetable impurities.

We agree with Mr. Homersham in believing that "the introduction by a new company of a pure, soft, and cheap water, distributed on the system of constant supply, would immediately *force* the established companies also to soften and purify their waters, or to resort to better sources, to lower their charges, and to adopt the continuous supply, with an expedition and completeness that would startle."

Having already given place to points of objection to the Board of Health's scheme, as discussed in the Institute of Architects, and elsewhere spoken of the Watford scheme, we will not occupy more space at present on a subject which will doubtless turn up again at a more fitting time.

Miscellanea.

THE ELECTRO-TELEGRAPHIC UNION OF BRITAIN AND FRANCE has been signed and sealed. On Wednesday in last week, at 9 P.M., the great fact was practically established. The *Goliah* steam-ship had then "payed out" the line of wire from Dover to Cape Grisnez, and mutual congratulations were immediately passed between the two nations. "The real calmut of peace between them," says the *Journal des Débats*, "is the protecting pipe which has just been laid across the channel, preserving the wire of the telegraph." Of this said pipe, however, which, as we see from a piece of it placed in our hands, is of gutta percha, and of considerable thickness, well laid on, we can only say that we hope the peace will not be broken when "the pipe is out." We are still of opinion that gutta percha is not likely to be a permanent insulater in sea-water and among the fishy tribes. But that it is a perfect insulater in the meantime cannot be doubted, and it may be so for some considerable period. As it is, "the jest or scheme of yesterday, has become the fact of to-day." Let this never be forgotten when we feel inclined to ridicule some new idea which may seem to be as preposterous to many as this one once did.—— We regret to observe, since writing this paragraph, that although the line, as reported down to yesterday morning, seems to have remained entire across the whole width of the Channel, at Cape Grisnez the wash of the sea amongst the rocks on Wednesday last destroyed a leaden protector laid on there to the wire, and has broken the latter itself: iron is to be substituted; and should the one wire answer, it is intended to have others in reserve in case of such accidents.

BALLOON RAILWAYS.—Major Browne, of Great Portland-street, has addressed a letter to the merchants and bankers of Liverpool, proposing the establishment of a balloon railway across the great desert of Africa. He suggests the establishment of a terminus near Morocco, whence he would lay 1,000 or 1,500 miles of single rails into the desert. The rails are for the guidance of the balloons, which are to carry fifteen persons each. An immense and lucrative trade with the interior, the major conceives, would be carried on by this means. He offers to exhibit his models free of expense. The major's balloons, like our more primitive shipping, would of course be dependent on the wind, and liable to be wind-bound at inconvenient seasons, however smoothly all might go with the rails in the desert. It seems to us rather singular, by the way, that no one but ourselves appears to perceive that the most feasible chance of realising a practical system of ballooning would be by imitating nature as far as possible. Now, although the structure of birds, with their great development of air cells and other advantages, be such that their surplus weight is small compared with their power, we never find a bird *without* such surplus *weight to be overcome* by actual working power, and that so persistently, that without the continued, or at least the occasional, exercise of such power, it will to a certainty fall to the ground. Why not apply such a principle to ballooning, then? Use gas to *diminish* the weight of apparatus, *but never to buoy it altogether up and carry it away:* leave always a little surplus weight as a point of resistance to be overcome by working power alone. Whether such a power be yet sufficiently attainable is another question.

UNNECESSARY SCAFFOLDING.—On passing the west end of Hyde Park-gardens a day or two since my attention was directed to what builders please to call a splendid piece of scaffolding, and if it were designed to support tons instead of cwts. it might have some claim to merit; but to erect such a forest of wood merely for the purpose of supporting a few men while cleaning and painting the outside of a house is, in my eyes, a marvellous piece of absurdity, independently of the tax upon the occupier, who is compelled to pay extravagantly for unncessary work; and the sooner this absurd practice of scaffolding for such purposes is abolished the better. A few well-placed ladders to support a light stage for the men to work on would answer all the purpose; for instance, secure one ladder horizontally upon the parapet or upper wall of the house, and attach the ends of two erect ladders to it, some 15 or 20 feet apart, the heels being secured to the ground. A light skeleton stage of wood about 20 feet by 3½ walled in about 3 feet high with coarse canvas, for the men to work in, might then be suspended by two tackle-falls from the upper ends of the erect ladders, at a sufficient distance to clear the cornices and other projections, which with guys properly arranged to direct and steady the stage, the men could work much better and more securely than they possibly can by the present cumbersome and expensive mode of scaffolding.—ONE WHO HAS PAID FOR USELESS SCAFFOLDING.

WORKS OF LOUIS PHILIPPE.—Speaking of the death of Louis Philippe, the *Athenæum* says:—"The establishment of a museum at Versailles, though a work not done altogether in good taste,—the great public buildings which he erected, or completed, in Paris,—and the monuments of the past which he took under his charge, with a lively sense of their beauty and importance,—constitute his claim to a notice in our columns. Paris represents three of her rulers conspicuously in her streets—Louis XIV., Napoleon, and Louis Philippe. The age of Charles II. is hardly more apparent in the City of London than is the influence of Louis Philippe in the squares and open spaces of Paris. He was fond of art. The Spanish school attached to the Louvre was of his formation; and the Standish Collection—a gift from a countryman of our own—was made by him as accessible to the people of France as if it had been given to the nation and not to an individual. When we look at the buildings in London erected under the influence of George IV., and compare them with those in Paris erected under the influence of Louis Philippe, we feel the insignificance of the Guelph and the comparative grandeur of the Bourbon.

EXTERNAL DECORATIONS.—A bookselling firm in New York, U.S., who are about erecting a new store, have commissioned Mr. Brown, an American sculptor, to execute a large bas-relief *in bronze*, as an ornament for the front of the building.

SALES OF HOUSE AND OTHER PROPERTY. Messrs. Farebrother, Clark, and Lye, lately sold, amongst other property, a freehold house and shop, No. 37, Blackfriars-road, let at 90*l.* per annum, for 1,490*l.*; No. 38, let at 100*l.* per annum, for 1,670*l.*; No. 39, let at 92*l.* 10*s.* per annum, for 1,550*l.*; No. 43, let at 98*l.* per annum, for 1,290*l.*; a leasehold house, held for twenty-one years, in Gloucester-place, New-road, 375*l.*; a ditto, No. 4, Fitzroy-street, held for a short term, 270*l.*; a freehold residence, known as Oak Lodge, Southgate, Middlesex, with sixty-seven acres of pasture and arable land, for 7,060*l.*; a leasehold estate at Mile-end, held for fifty-two years (by the mortgagee), for 6,660*l.*; Whilton Wharf, with house and limekiln, and eight acres of land, 1,500*l.*; a water corn-mill, working three pair of stones, the Mill Inn public-house, and thirty-eight acres of land, for 2,590*l.*

CHARING-CROSS BRIDGE COMPANY.—The last half-yearly report states that the tolls for half-year ending 31st July, amounted to 3,118*l.* 11*s.* 7*d.*, being less by 110*l.* 8*s.* 4*d.* than for corresponding period of previous year. There was a sum available for dividend to the amount of 1,337*l.* 14*s.* The claim of the Hungerford Market Company, amounting to 500*l.*, had been amicably settled, and the balance due to Mr. Chadwick, for the erection of the bridge and approaches, having been certified to be 3,396*l.*, the directors have satisfied this claim. The directors have communicated with the South-Western Railway directors, to secure their co-operation in carrying out the project for the new street between the York and Belvidere-roads. By the present mode of lighting the bridge a saving of 50*l.* per annum is effected.

COMPLETION OF THE ARTESIAN SALT-SPRING AT KISSENGEN.—Dr. Granville announces in the *Times*, that this great and tedious work has at length been so far completed that, on 12th instant, a jet was exhibited, springing with immense force to the height of 58 feet from a depth of 1,878½ feet of bore, and spreading out like a palm-tree from a column of four inches in diameter. The stratum

of rock-salt whence the jet flows, is supposed to be 1,000 feet thick, and *the brine* has been found to hold no less than 27¼ per cent. of salt. The water as it issues from the surface has a temperature of 66 deg. Fahrenheit, and is delivered at the rate of 100 cubic feet a minute. The ejecting force is said to be a source of carbonic acid gas met with at a depth of 1,680 feet from the surface. The perforation is to be sunk 30 feet deeper, and the well completed at the end of this year. The annual produce of salt from this source is to be limited to 6,000,000 lbs., which, after deducting 60,000 florins for expenses, will add to the Bavarian crown revenue, at current prices, 300,000 florins. The whole cost of this great Artesian work will amount to 80,000 florins (6,666*l.*). It was begun in the shaft of an old well called the Schönborn, in 1832, and during 11 years, 800 feet only were bored. But in 1843 Inspector Joseph Knorr advised the government to resume operations, which have never since been interrupted, day or night, till now.

THE SCOTTISH NATIONAL GALLERY.—On the 30th ult. his Royal Highness Prince Albert laid the foundation stone of the new edifice to be erected on the mound at Edinburgh, in the midst of an immense concourse of people, who thronged the hill sides and open spaces in one continuous amphitheatre from Holyrood to the Prince's-street-gardens, in the midst of which the mound rises. After the ceremony, the Prince, in a speech wherein he made graceful allusion to the influence and importance of the fine arts, said that it was gratifying to find that part of the funds available for the support of this undertaking should be the ancient grant which, at the union of the two kingdoms, was secured towards the encouragement of the fisheries and manufactures of Scotland, as it afforded a most pleasing proof that these important branches of industry have arrived at that stage of manhood and prosperity that—no longer requiring the aid of a fostering Government—they can maintain themselves independently, relying upon their own vigour and activity, and can now in their turn lend assistance and support to their younger and weaker sisters, the fine arts. The history of this grant exhibits to us the picture of a most healthy national progress: the ruder arts connected with the necessaries of life first gaining strength; then education and science supervening and directing further exertions; and, lastly, the arts, which only adorn life, becoming longed for by a prosperous and educated people.

ST. STEPHEN'S, WALBROOK.—The repairs are about to be commenced, we hope effectively. The picture by B. West is taken down to be placed in the north transept—and a window is to be opened over the other. It is expected the grocers' company will present one of stained glass. The carved work has been placed in the hands of Mr. Rogers. The organ gallery will be enriched similarly to that of St. Mary-at-Hill. Over the altar is to be placed a new cornice, in keeping with the style of the church, and enriched with carvings of fruit and flowers. The architect is Mr. Turner; the builder, Mr. Young.

RATING SMALL TENEMENTS.—By an Act now in force (13 and 14 Victoria, cap. 99), passed on the 14th instant, for the better assessing and collecting the poor and highway rates in respect of small tenements, it is provided that vestries are to determine whether 6*l.* tenements shall be rated to the owners instead of the occupiers, and when thus rated the owners are to be rated on a reduced scale. The goods of the occupiers are to be liable for the rates as well as the goods of the owners. Municipal privileges are not to be taken away from occupiers by rating the owners, but owners of tenements held for longer periods than from year to year are entitled to add the rent to the amount paid for rates. The Act extends only to England and Wales.

CASTING METAL FLANGES ON GLASS TUBES.—In a patent recently taken out, Mr. William Mayo, of Silver-street, Wood-street, Cheapside, manufacturer, claims the casting of metal joints on tubes or pipes of earthenware, to connect such tubes, or for the connection of such tubes to plates or surfaces of glass and earthenware, or for connecting to each other such plates or surfaces of glass and earthenware.—*Mech. Mag.*

THE SQUARE AND CURVE.—Professor Rangabe states (see THE BUILDER, p. 404) that, "Of all those lines whose magnificent harmony is the source of the inimitable beauty of the Parthenon, there is not one which is a straight line." He says this is strictly observed throughout; thus, closely following the order of nature, which avoids a straight line. Permit me to ask, is there no straight line in the triangular pediments of the east and west fronts, which are, or were, so richly embellished with exquisite sculptures? "J. B. W." (see p. 400) says, that architecture is in a great degree unnatural, as it copies no type in nature exactly. This is literally true, for it is purely a human invention. I grant that it may sometimes imitate the *routine* of nature with good effect, but to follow her closely throughout appears to be neither practicable nor desirable. The great charm of architecture is its contrast to nature; and much of its beauty consists in squareness and uniformity.—LAPIS.

*** The curvature alluded to by Professor Rangabe was to obtain squareness in effect, which straight lines would not have given.

DRAWING COPIES.—A cheap graduated series of drawing-copies on landscape subjects, by Mr. F. W. Hulme, has just now been published by the National Society for Promoting the Education of the Poor, and will be found very useful for schools. Mr. Hulme's skill as a landscape draughtsman is so well known, that it is unnecessary for us to say these copies are drawn with a free bold hand, and are just what they should be. A fourth part should be added, to carry the student on one step further.

BOSTON, U. S.—Major Bigelow, brother-in-law of Mr. Lawrence, the American minister here, and at present mayor of Boston, has contributed a sum of 1,000 dollars to that city in aid of the establishment of a free public library there. A committee is about to carry the purpose of the mayor into effect, several other influential and wealthy persons having promised to co-operate. The hon. Governor Edward Everett, himself a former minister to the court of St. James's, has tendered his collection of public documents and state papers to the Boston city government. According to the local *Daily Advertiser*, it amounts to about 1000 volumes, and contains every thing material from the foundation of the Government down to 1825, and is tolerably complete to 1840. Governor Everett suggests that if the Government provide a suitable building, it would be so amply supplied from time to time by donations, that only a moderate annual appropriation for books would be wanted. The people would regard it as their own creation, and take a pride in its increase.

BEDFORDSHIRE AND ST. ALBAN'S ARCHÆOLOGICAL AND ARCHITECTURAL SOCIETIES.—On Tuesday week these societies met at Dunstable, Mr. H. Brandreth in the chair, when Mr. G. Somers Clarke read a paper on the "Architecture and History of Dunstable Church, to which we may revert. Mr. Bergue then read one on "Local Tokens," and the Rev. H. Rose another on the "Architectural Designs on Ancient Coins." One of the barrows on the Downs was examined, but nothing was found of any importance, and it was concluded that it was not of Roman, but of British origin, and of an earlier period than that in which the former held the island.

PROGRESSIVE SOCIETY OF LIVERPOOL JOINERS.—On Tuesday week this Society held a public meeting in the Concert-hall, for the purpose of developing the objects of the Society, and enlisting additional support in its favour. There was a very numerous attendance. The chair was occupied by the mayor.

THE PUBLIC LIBRARIES AND MUSEUMS ACT, which has passed the Legislature, repeals the Act passed five years ago, for encouraging the establishment of museums in large towns; and makes it lawful for the mayor, on the request of the town council of any municipal borough (with a population exceeding 10,000 at the last census), to ascertain whether the Act shall be adopted for such borough. Two-thirds of the burgess voters, for or against the halfpenny rate, &c., rule the question. If the burgesses on the poll should determine against the adoption of the Act, it is not to be again proposed within two years.

PRESIDENCY OF THE ROYAL ACADEMY.—The lamented decease of Sir Martin Archer Shee leaves the presidency of the Royal Academy open, and various speculations have been made as to his successor. As, however, they are *but* speculations, and a very few days will decide the matter, we avoid giving currency to them.

PENNY MAPS.—To place a series of useful maps really within the reach of the working man, Messrs. Chapman and Hall have commenced an issue at a *penny* each, to comprise, when completed, about 100 maps, which will admit of all the most important countries being given on enlarged scales. The first part contains Denmark, Hungary, East and West, Holland, and Belgium; the second gives England, north and south, Scotland and Ireland. Clearness is the great thing to be aimed at, and seems here fairly attained.

REMOVING A CHURCH AT LIVERPOOL.—In consequence of the enlargement of the London and North-Western Railway Company's station, the church for the blind, formerly situated in Lord Nelson-street, has been removed carefully, piece by piece, from its previous "location," and is now being rebuilt, exactly in its former style and size, by Messrs. S. and J. Holme. Each piece of stone is carefully marked previous to removal; and, in a few weeks, the frequenters of this popular religious edifice will see it in its new situation, opposite the Philharmonic Hall, without a single stone, or even piece of timber, added or taken away. The interior, also, will present no change. The sight of a comparatively old and weather-beaten church gradually rising from the ground, surrounded by so many new and handsome public edifices, is not only novel, but, we believe, perfectly unique in the annals of the building trade. [Not so very novel: a church was lately removed at Edinburgh in the same way.] It was the first public building at which Mr. Samuel Holme worked, and he intends placing the last brick in its proper place with his own hands. The new asylum for the blind, which stands close to the church, is also fast approaching completion.—*Albion.*

NEWSPAPER CORRESPONDENCE.—Editors, publishers, and correspondents of newspapers in the United States have now the privilege of using the post-office *professionally* free of charge for correspondence.

"CHRISTIAN" ARCHITECTURE.—To maintain that *Gothic* architecture is essentially *Christian* architecture is preposterous. The Gothic did not even generally prevail at any period of the history of Christianity; it appeared only a thousand years after the establishment of the Church by the state, and it never flourished in Asia, in Africa, in the east of Europe, or in Italy or Sicily; it is therefore a comparatively late style, and was spread over a small portion of Christendom only,—a few hundred miles east and west of the Rhine, and in England. In point of time also its duration was short; it did not survive four centuries, whereas other styles have not only been more widely spread in Christendom, but have endured longer, so that neither in point of space nor time can Gothic be termed "Christian Architecture." The great mass of Christian churches have been Roman, Byzantine, Lombard, Norman, Moorish, Italian, or classical: for the first twelve hundred years, Romanesque, and subsequently, shared by Gothic with the Italian and classical.—*Art-Journal.*

WIDE AGAIN.—Mr. Editor, pray give the following list of tenders for alterations in Pullen's-row, Islington, which were delivered on the 23rd instant. Mr. Wright, architect. It is rather startling:—

Hughes	£938	0	0
Deacon	830	0	0
Nash	785	0	0
W. Hill and Co.	779	0	0
Elston and Son	760	0	0
W. M. Hill and Son	740	0	0
Kesteven	498	15	0!!

H. H.

Observe the following tenders for a new church at Edgbaston, Warwickshire. Mr. S. S. Teulon, Architect. Quantities not furnished:

Cooper (Derby)	£5,904
Briggs (Birmingham)	5,540
Branson and Gwyther (Birmingham)	5,100
Smith (ditto)	4,900
Roebuck (Laceby) (accepted, I believe)	3,691

SENEX.

THE AMERICAN ART-UNION now issues, monthly, an illustrated "bulletin," which has assumed the form of an art-journal, and contains much interesting matter. We observe in it, with regret, a tendency, on the part of some of its correspondents, to under-rate English art,—for the most part, through ignorance.

TENDERS

Tenders for alterations and additions to Caldwell's assembly rooms, Soho; Mr. G. B. Marshall, architect.

Unwin	£2,768	0	0
Smith	2,738	0	0
Naylor	2,195	0	0
Potter	2,159	13	6
G. Bird	2,109	0	0

The quantities were furnished.

For three houses to be erected in Aldersgate-street; Mr. Thomas Wright, architect.

Johnson and Pask	£1,989	0	0
Nash	1,650	0	0
William Hill	1,568	0	0
Elston and Son	1,390	0	0
Matthew Hill and Son	1,250	0	0
Hughes	1,140	0	0

TO CORRESPONDENTS.

"J. B. W." "R. C.," "S. S." (the merest hole which lets in the light is in strictness taxable), "C. G. H. K.," "M. P.," "*Architecte à Paris*" (a license is not necessary, nor is a stamp required), "M.," Regent-street, "C. F. D. (thanks), "G. W. T." "L. L. L.," "C. L.," "Mr. R.," "M. M.," "a lady," "N.," "B." (shall appear), "Agamedes," "T. B. S.," "J. S." (we meant no offence, our object is to induce improvement), "Assumption," "Nelson monument, Trafalgar-square," (G. J. H. asks who is carving the lions for the foot of the column? We are not aware that they are begun), "The Tippets of the Canons Ecclesiastical," with illustrative wood-cuts, by Gilbert J. French (Geo. Bell, Fleet-street); "Useful Hints on Ventilation," by W. Walker, engineer (Simpkin and Marshall, London; Parkes, Manchester); "Leisure Moments," a monthly serial, by Robert James Culverwell, M.D.;" Zig-zag to Paris and straight Home," or a thousand miles and fourteen days for fourteen pounds.

Erratum.—In notice, last week, of roof at Bricklayers' Arms' station, for "Telford" read *Tredgold*.

"*Books and Addresses.*"—We have not time to point out books or find addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and *not* to the Publisher.

ADVERTISEMENTS.

EXHIBITION OF '51.—Exhibitors, Inventors, and others requiring ILLUSTRATIONS on WOOD of Machinery, &c., for Books, Catalogues, or Pamphlets, are invited to communicate with Mr. CHARLES D. LAING, Architectural and General Engraver on Wood to "The Builder" and other Periodicals. Moderation in price, beauty of execution, and punctuality may be relied upon.—Address, 13, Guildford-street East, Clerkenwell.

TO PLUMBERS.

DIRECTIONS for MAKING JOINTS in GUTTA PERCHA, attaching to metal, &c. with lists of prices, may be had on application to the GUTTA PERCHA COMPANY, Patentees, 18, WHARF-ROAD, CITY-ROAD.

LIGHTERAGE.—To Saw-Mill Proprietors, Timber, Slate, and Stone Merchants, or others, requiring Lighterage.—The Advertiser having a large number of Barges, is willing to undertake LIGHTERAGE at prices that defy competition.—CHARLES STRUTTON, 34, Commercial-road, Lambeth.

W. S. KENNEDY'S CHINA MORTISE FURNITURE (with Patent Spindles), Finger Plates, Bell Lever-pull Furniture, Porcelain Letters, Garden Labels, &c., may be had of most of the respectable ironmongers throughout the kingdom; or wholesale only at JAMES ARTHUR MILES'S Wholesale Warehouse for Brass Foundery and Gas Furniture, 13, Panceras-lane, Queen-street, Cheapside.

PAVING, 2s. 9d. PER SQUARE YARD. Basements, Foot-walks, Malt-houses, Corn Stores, Floors for Warehouses, and every description of Pavement laid down at the above low price, and the work guaranteed.—Apply to JOHN PILKINGTON, POLONCEAU'S BITUMEN PAVEMENT OFFICE, 14, JOHN-STREET, ADELPHI.—N.B. Country Agents and Railway Engineers and Contractors supplied with the best bitumen for covering bridges and arches.

SEWERAGE of LONDON.—The attention of the COMMISSIONERS appointed to determine upon the most efficient material for the Construction of the Sewers of London is particularly directed to the ASPHALTE of SEYSSEL, which, more than any other material, is applicable to the constructing and internal coating of Brick Culverts, and other channels for drainage. The experiments made by the Royal Artillery on the Embrasures of Plymouth Citadel, constructed of Seyssel Asphalted Brickwork, under the orders of the Honourable Board of Ordnance, have fully proved the superiority, adhesiveness, and strength of Seyssel Asphalte over all other cementitious compositions. A printed account of these experiments can be had on application to J. FARRELL, Secretary, Seyssel Asphalte Company, "Claridge's Patent." Established 1838.

Note.—The application of the Asphalte of Seyssel is specially recommended by the Commissioners on the Fine Arts, for covering the ground line of brickwork in marshy situations, and it has been suggested that it would be peculiarly applicable for covering the Areas of closed Graveyards, and for the construction of Catacombs.

IMPORTANT TO OIL AND RAILWAY GREASE MERCHANTS AND FACTORS.

FOR SALE, at the Works at Weymouth, or may be delivered to any part of the kingdom, the superior product by distillation of BITUMINOUS SCHALE, or SCHISTUS, "LIQUID BITUMEN," containing, 1st, a Volatile Oil, or Mineral Spirit; 2nd, an Oil of a greater density; 3rd, a Fatty Mineral Oil; 4th, Paraffine; 5th, Grease, slightly alkaline; 6th, Tar. The Volatile Oil, or Mineral Spirit, is admirably adapted as a solvent, and may be used for all purposes to which the most highly rectified spirit of turpentine is employed, or may be used for spirit and camphine lamps. The second oil, not so very volatile, will dissolve in any proportion with seed or fish oils, of which it considerably augments their illuminating power, and prevents their becoming rancid. The third is admirably adapted for lubricating machinery, and contains—the 4th, Paraffine, which is easily obtained by crystallization, and requiring but little treatment to make excellent candles. The 5th, Grease, superior to animal oil or fat for the use of carriages. The 6th, Tar, perfectly black, very siccative, and which may be used generally for all purposes of varnish, and where mineral tar is employed.—Any further information may be obtained either of Mr. W. C. HOMERSHAM, Schiste Works, Weymouth; or of Mr. C. F. CHEFFINS, 11, Southampton-buildings, Chancery-lane, London.

REDUCED PRICES.—EDWARD SIMMS (late William Cleave), of Wilton-road, Pimlico Basin, begs to acquaint Builders and the Trade that he has now on hand, at his Manufactory (the first of its kind ever established), a very large Assortment of Dry and Well-seasoned OAK and DEAL PREPARED FLOORING BOARDS and MATCH BOARDING of all sorts, from ¾ inch to 1¼ inch thick, planed to a parallel width and thickness, and at greatly Reduced Prices. Also, Timber, Deals, Oak Planks, Scantlings, Sash Sills, Mouldings prepared by Machinery, Laths, &c.—Apply at E. SIMMS'S (late W. Cleave's) Flooring Manufactory, Wilton-road, Pimlico Basin.

FLOORING.—ALFRED ROSLING begs to inform his customers and the trade generally, that he has again very materially REDUCED the PRICES of his DRY FLOOR BOARDS, of which he has in stock an extensive assortment. To purchasers of a quantity of freshly prepared boards A. R. is able to offer a great reduction upon his current prices, to avoid the expense of piling away in the drying sheds. Mouldings in great variety, and prepared in a very superior manner.—Southwark-bridge Wharf, Bankside, October, 1849.

THOMAS ADAMS, Mahogany and Timber Merchant, Bermondsey New-road, Southwark, near the Bricklayers' Arms, is SELLING SEASONED FLOORING at LESS PRICES THAN ANY ADVERTISED; also matched boards and mouldings prepared from the very best material, and in a superior manner. Cut deals and scantling of every dimension; mahogany, cedar, rosewood, wainscot, elm, beech, oak, &c.; pantile, oak, and fir laths; wheelwrights' goods. All sawn and prepared goods (except timber) delivered free of expense. Sawing charged at mill prices. Very extensive drying-sheds.

N.B. English timber taken in exchange for foreign.

PRESENT PRICES of SEASONED FLOORING, prepared by improved Machinery. Net cash.

1¼ in. yellow, per sq.	20s. 0d.	1 in. spruce, per sq.	13s. 0d.
1 " " "	17s. 6d.	¾ " " "	11s. 9d.
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TIMBER of any size, PLANK, DEALS, and BATTENS, &c., Sawn on the most approved principle, Boards, &c., Prepared, Matched, and Grooved, by Muir's Patent Machinery. The Mills have all the advantages of navigation and water-carriage, being connected with the Thames by the Grosvenor Canal. Goods fetched from the docks and carted home free of charge.

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10,000 feet of gilt mouldings always in stock.

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January, 1, 1850.

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Date of Policy.	Sum Insured.	Original Premium.	Bonuses added subsequently, to be further increased annually.
	£.	£. s. d.	£. s. d.
1806	2,000	79 10 10 extinguished.	1,221 2 0
1811	1,000	33 19 2 ditto	231 17 8
1818	1,000	34 16 10 ditto	114 18 10

EXAMPLES OF BONUSES ADDED TO OTHER POLICIES.

Policy No.	Date.	Sum Insured.	Bonuses added.	Total with additions to be further increased.
		£	£. s. d.	£. s. d.
521	1807	900	923 12 1	1,823 12 1
1174	1810	1,200	1,160 5 6	2,360 5 6
3395	1820	5,000	3,538 17 8	8,538 17 8

Prospectuses and full particulars may be obtained upon application to the Agents of the Office in all the principal towns of the United Kingdom; at the City Branch; and at the head Office, No. 50, Regent-street.

DISPUTED LIFE POLICIES.—"A trial of considerable interest to Life Assurance Offices and the public was concluded yesterday in the Court of Exchequer. The Eagle Company held a policy for an assurance of 500l. in the Albion Company as security for an advance, the payment of which policy was now disputed by the Albion, on the ground that at the time it was effected the fact of the assured party having been a man of intemperate habits was concealed from the office. The chief evidence turned upon the question as to the degree of intemperance that had been exhibited, and the result was that a verdict was given against the re-isting office, not only for the amount of the policy, but also for 40l. interest from the date when it became due. The circumstance of the action being brought by one office against another presents a striking illustration of the uncertainty which may attach to all policies under the present system, and shows that the only mode by which absolute security can be obtained by the public must lie in the general adoption by Assurance Offices of the plan of protecting themselves in every case by due inquiries before the granting of each policy, and of afterwards assuming the full responsibility of the completeness of such inquiries by holding themselves precluded from raising any future question. In the present case two offices are found to be diametrically opposed in their opinions as to what can properly invalidate a claim, and yet the public are expected to be able to guard themselves against such contingencies. Similar cases have occurred before, and even if they were more rare, they would seriously injure the progress of life assurance. The very principle upon which the business is founded is the removal of uncertainty, and whenever that principle is counteracted in the slightest degree, the people who would be the first to resort to its advantages are the first to be deterred."—*Times*, July 11th, 1850.

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Owing to this important improvement in the practice of Life Assurance, the progress of this Company has been rapid from the commencement of its business, and is steadily advancing.
Copies of the Report of the last Annual Meeting will be forwarded, on application to Solicitors, to whom commission is allowed. ALEXANDER ROBERTSON, Manager.

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BATH and BOX WEATHER STONE.—HENRY STONE, QUARRYMAN and STONE MERCHANT, begs to inform Architects, Builders, and others, that he still continues to supply the best Combe Down and Lodge Stile Stone.—H. S. also begs to announce that he has opened two extensive quarries on Box-hill, from whence he is able to supply, to any extent, the best Ground Weather Stone on the most reasonable terms.—N.B. Ashlar, Quoins, and Rangework cut to order.—6, St. Mark's-place, Widcombe, Bath.

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RANVILLE STONE from Ranville Quarries, near Caen, Normandy.—Suitable for strong works, wharf and quay walling, price and labour similar to Caen Stone.—Depôt, Caen Sufferance Wharf, Rotherhithe.—Information and samples supplied from the Office, 18, Southwark-square, Borough.

CAEN STONE.—P. FOUCARD, Quai des Abattoirs, Caen (propriétaire des Carrières à Allemagne), offers CAEN STONE guaranteed from the first quarries at Allemagne, at 1s. 1d. per cubic foot, delivered to vessels or waggons (free of expense), from the depôt at the Whitby and Scotch Wharf, 14, Fore-street, Limehouse.—Contracts taken for any quantities.—Cargoes shipped to order, from Caen, to any part of the coast, on the same terms.—Apply to P. FOUCARD, at the Office, 39, Stoney-street, Borough Market; or to Mr. S. WEBSTER, at the Wharf.—Samples to be seen, and references to be had, at Mr. MARSH'S, No. 3, Charlotte-row, near the Mansion House.

STIRLING'S BELVEDERE SLATE WORKS, Belvedere-road, Lambeth.—A reduced list of prices of the best WELCH SLATE SLABS, planed both faces, will be sent on application (post paid) being made, and inclosing a postage stamp. The prices are under those advertised for inferior slates.

THE PIMLICO SLATE WORKS.—Patronized by Royalty, the Heads of the Nobility, the Clergy, Architects of Eminence, Builders, Railway Contractors, and the Public generally.—MAGNUS'S ENAMELLED SLATE notwithstanding the vile imitations and infringements of his patent that are attempted) continues to grow in favour with the public, being handsomer, more durable, and very much cheaper than marble.—Price lists sent to any part of the kingdom gratis, and a book of drawings sent postage free on receipt of 3s. in postage stamps. Cisterns, Filters, Dairy and Larder Shelves, Wine Cellar Fittings, Slabs, and every variety of plain Slate Work, at prices that defy competition.—49 and 50, Upper Belgrave-place.

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VEINED MARBLE.—TO MASONS, BUILDERS, &c.—NOW on SALE, at the Marble and Wood Sawing Mills, Commercial-road, Pimlico, a LARGE ASSORTMENT of VEINED MARBLE, in SLABS, at the following low prices for Cash:—

½ inch .. .. .. 1s. 3d. per foot super.
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½ inch, at 1s. 2d. per foot.
1 inch, at 1s. 4d. „

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DAIRIES fitted up with MARBLE or SLATE SHELVES.—MINTON'S Encaustic and White or Blue and White Porcelain Tiles in great variety of pattern.

A GOOD MARBLE CHIMNEY-PIECE FOR FORTY SHILLINGS.

A liberal discount to the trade.

PATENT STONE MARBLING, and MARBLE-LIKE POLISHING, by which any COMMON STONE may be brought to bear the closest resemblance to the finest Marble, and by their Process

Messrs. ORSI and ARMANI

Can give to Stone Columns, Steps, Capitals, Chimney-pieces, and every kind of in-door Stone Work, the appearance of the finest and richest Marble, or Polish and Preserve the Natural Colour of Stone.

SAMPLES LAY FOR INSPECTION. List of Prices, and every Particular, may be obtained at the Office, 6, Guildhall-Chambers, Basinghall-street, City; and at the Office of "The Builder."

ATKINSON'S CEMENT.—This Cement has hitherto been manufactured in Yorkshire, and, through long detention at sea, has often proved stale and unfit for use on its arrival in London. By the arrangement now made, the Cement will be manufactured in London, and thus presented to consumers in a fresh and genuine state, by the sole Agents, J. B. WHITE and SONS, Millbank-street, Westminster.

KEENE'S and PARIAN CEMENTS, for internal stucco, are employed very advantageously in place of wood for skirtings, architraves, and panel mouldings, and for in-door flooring, instead of stone. The peculiar properties of PARIAN Cement allow of its being painted or papered upon within a few hours of its application, and thus render it an important substitute for common plastering in those cases where expedition and beauty of finish are essential.—J. B. WHITE and SONS, Millbank-street, Westminster, Patentees of KEENE'S Cement, Licensees of PARIAN Cement.

PORTLAND CEMENT, as manufactured by J. B. WHITE and SONS, possesses all the properties of the best Roman Cement, but has the advantage over that material of wholly resisting frost. When used as a stucco it does not vegetate or turn green in damp situations, and requires no colouring. Employed as an hydraulic mortar for brickwork, it carries four to five measures of sand to one of cement, and is proved by trial to become harder and stronger in these proportions than Roman Cement with but one measure of sand. This superior connecting power, combined with its eminently hydraulic properties, point it out as the fittest material for building sea and embankment walls, the lining of reservoirs, cisterns, and baths, and for all those purposes where strength and a perfect resistance to water are required.

Manufacturers—J. B. WHITE and SONS, Millbank-street, Westminster, and 36, Seel-street, Liverpool.

PORTLAND CEMENT, solely MANUFACTURED by WILLIAM ASPDIN, Son of the Patentee.—Messrs. ROBINS, ASPDIN, and Co. request reference to No. 296, page 491; and also Nos. 284 and 285, pages 343 and 351 of "The Builder," for accounts of EXPERIMENTS on the strength of Portland Cements, whereby the great superiority of their Cement is manifest. This Cement has been proved for upwards of twenty years in the Thames Tunnel to resist the action of water; it is stronger in its cementitious qualities, harder, and more durable than any other description of Cement; it does not vegetate, oxydate, or turn green; nor is it affected by any atmospheric influence whatever the climate, resisting alike the action of frost and heat. It is manufactured to set in from five to sixty minutes. For all purposes that Cement is applicable the Proprietors challenge competition.—Orders received by Messrs. ROBINS, ASPDIN, and Company, at their Manufactory, Northfleet, Kent, and their Wharf, Great Scotland-yard, Whitehall; also at their Depôt, 46, Hanover-street, Liverpool.

THE PARIAN CEMENT, for INTERNAL STUCCO, which you supplied at Messrs. J. & R. MORLEY'S warehouses and dwelling in Wood-street, Gresham-street, in the City, has been used throughout the premises, in every story; altogether about ten thousand yards superficial, chiefly upon recently built walls, and a small portion upon timber partitions, and that with the most perfect and satisfactory result. I feel it also necessary to observe, that the plasterers' work was almost invariably followed up on the next day by the painters, thereby enabling me to have the buildings complete in the shortest possible time, both for business and for the occupation of the establishment. I am, therefore, of opinion, that the use of this new material is a most valuable feature in building operations, and fully justifies that which I was given to understand, viz., that it was an extraordinary material. I think it right to mention that I am at the present time having a great extent of similar work executed at another range of buildings, where time and the quality of the work are of the utmost importance.

(Signed) JNO. WALLEN, Architect, London.

To Messrs. Chas. Francis and Sons, Manufacturers, Nine Elms.

JOHNS and Co.'s PATENT PERMANENT STUCCO WASH, CEMENT, and PAINT.—The attention of the trade and the public generally is solicited to these very excellent and well-known materials, which, for their beauty, durability, imperviousness, and cheapness, are unequalled. THE PERMANENT WASH, as a substitute for common lime-wash or water-colour, is an article which has long been wanting for stucco and brick-work; it is of a stone colour, but may be tinted to any other; is perfectly dry in twenty-four hours; will not wash off; is very little dearer than the common washes; and, being a non-absorbent, is admirably adapted for railway stations, union workhouses, schools, barracks, prisons, &c. One cwt. is sufficient to cover, with two coats, 250 square yards. THE CEMENT, from the great reduction in price, and its suitableness for internal as well as external surfaces, places it above all other materials of its kind; it has no caustic qualities; may be painted or papered in a few days; never blisters, cracks, or vegetates; soon becomes as hard as stone; and may be cleaned with a brush and water. The merits of the PAINT are well known for its application to stucco work of all kinds, and external work generally. Numerous testimonials, prospectuses, and every information may be obtained, on application to the Sole Agent, PHILIP HARE, at the Warehouse, 22, Steel-yard, Upper Thames-street. A liberal allowance to wholesale dealers.

BELL'S PATENT LIQUID CEMENT is ready for use, and only one-eighth the cost of oil-paint. For beauty it is pre-eminent, giving the exact appearance of FINE CUT STONE. Can be used at once on fresh Roman Cement, or any other plastering, and will protect the walls as well as Roman Cement. In casks of 1, 2, and 3 cwt., at 8s. 15s. and 21s., casks inclusive.

PATENT MINERAL PAINTS,

Invaluable for cheapness, beauty, and permanence: not half the cost of other paints, always ready for use, will keep good for years, and therefore well suited for exportation. Brilliant black, 2s.; rich browns, 2s. 9d.; greens and light colours, 4s. per gallon.

G. BELL and Co., 9, Wellington-street, Goswell-street.

BLUE LIAS LIME, PLASTER, &c.

THOMAS FREEN and CO. having connected with their ROMAN CEMENT WORKS an extensive Manufactory of GROUND BLUE LIAS LIME and PLASTER of PARIS, beg to call the attention of Builders and others to the very superior quality of these articles, which they are prepared to supply upon the most reasonable terms.

WORKS—Tuscany Wharf, Regent's Canal, Kingsland-road, London.

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TO BUILDERS, CONTRACTORS, AND OTHERS.

GREAVES'S BLUE LIAS LIME and CEMENT, direct from the works, Stockton.—RUTTY and VEREY beg to inform the Trade that they continue to supply Blue Lias Lime and Cement as usual at No. 2, Wharf, Paddington, only. Also Glaze Drain Pipes.—N.B. No other lime kept at the wharf.

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GREY-STONE LIME.—HALL, Brothers, Mersham Lime Works, near Reigate, beg to offer to Builders and others a list of their prices for Cash on delivery.

Grey-Stone Lime	6s. 0d.	per Yard, or 22 Bushels.	
Ditto, for Manure	4s. 0d.	ditto	ditto
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In not less than Six Yard quantities, and put on the Railway for all goods stations on the London and Brighton, and South-Eastern Railways, or lines connected with them. A fresh supply hot from the kilns daily, at the Bricklayers' Arms and Croydon Stations, and delivered to all parts.

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MARTIN'S PATENT FIRE-PROOF AND ORNAMENTAL CEMENT,
APPLICABLE FOR
ALL INTERNAL PURPOSES WHERE PLASTERING IS REQUIRED.

This invaluable Cement has now been before the public so many years, and obtained so high a standing in the estimation of all who have used it, that it is unnecessary to comment on its merits. Messrs. STEVENS and SON however feel called upon to observe, that from the greater extent of surface which a given quantity of MARTIN'S will cover, as compared with other Cements for internal use, there will be found a gain of 16½ per cent. in material, full 7 per cent. less in price, with an additional saving in labour of 10 per cent., by its allowing about forty minutes for working, being less than one-tenth of the time of other cements of a similar nature, therefore worked with greater facility, making together the enormous saving of full THIRTY-THREE PER CENT.; its advantages therefore cannot admit of doubt. Specimens, showing its beauty, hardness, and applicability to all plain and ornamental purposes, may be seen; and the Cement, in any quantity, obtained of Messrs. STEVENS and SON, at their Plaster and Cement Works, 186, Drury-lane, London.—Manufactory, Derwent Mill, Derby.

N.B. This Cement will receive paint or paper in a few hours after the completion of the work by the plasterers.

THE PATENT ARCHITECTURAL ROOFING TILES are strongly recommended as an improved system of roofing, and, from their extremely light and elegant appearance, are peculiarly adapted for covering Churches, Parsonage-houses, Schools, Ornamental and other Villas. A material feature of these Tiles is their economy; they are as cheap as ordinary slating, and do not require stronger timbers. Every information may be obtained by application to the Secretary, at the Offices, No. 158, Strand, where specimens of the Tiles may be seen.

MINTON and CO.'S ENCAUSTIC and other PATENT TILES for Churches, Entrance Halls, Conservatories, Balconies, &c., Antique, Geometrical, and Alhambric Mosaics, manufactures of a highly decorative character and extreme durability, Slabs and Tiles for Fireplaces and Hearths, Covings for Grates, Door Furniture, White Glazed and Ornamental Tiles for Baths, Dairies, and Kitchen Ranges may be had in great variety at their Warehouse, 9, Albion-place, Blackfriars-bridge, London, and at their Manufactory, stoke-upon-Trent, Staffordshire.

WHITE SUFFOLK and RED FACING BRICKS, of superior quality. Moulded bricks to any pattern.—Apply to Mr. BENJAMIN GOUGH, 37, Newington-crescent, Newington Butts.

N.B. COWLEY and KENT BRICKS from the NEW CLAMPS now open, and Kentish Ragstone direct from the Quarries, at reduced price.

BRICKS.—300,000 OLD BRICKS for SALE, cheap, of several large houses and warehouse in Wheeler-street, Spitalfields, which are now being taken down for the new street.—Inquire on the premises, or at B. GOODMAN'S, Dealer in Building Materials, Cambridge-road, Mile-end.

WARD and Co., HONDURAS WHARF, BANKSIDE, and JAMAICA COFFEE-HOUSE, CORNHILL, LONDON.

Fire Bricks, best, 65s. per thousand; Stock Bricks, 27s.; Country Pan Tiles, 50s.; Plain, 32s. 6d.; 12 and 9 in. Flooring ditto, very bright and red, Paving, Crown, and Circular Fire Bricks. Stourbridge, Newcastle, and Welsh Bricks; ditto Lumps, Tile, Shield-guards, Pattern-goods; Clay, Loam, &c. of the best sort, and cheaper than any other house; Sand Ballast; Sanitary Pipes; Dutch and English Clinkers; Suffolk Facings, White and Red; Patent Malting Tiles, &c. Shipments to all parts of the world.

BRICKS.—In consequence of the low price at which Brickmakers have, for some time past, been purchasing Ashes and Breeze, H. DODD is enabled to offer his bricks, which are of good quality, at the following low prices; and as his fields are only a quarter of an hour's walk from the City, H. D. earnestly requests purchasers will favour him with a visit, in order to inspect his stock and to judge for themselves.

Marle Cutters.....	80s. per thousand.
Yellow Seconds.....	53s. 6d. „
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Marle Place. Half-washed Stocks, and Place Bricks, at equally low prices. These bricks are sound, well burnt, and unusually free from defects; a very large proportion of the Stocks being suitable for external facing. They will be delivered at the above prices anywhere within two miles of the fields.

Apply to HENRY DODD and Co., at the Counting-house, Hoxton Brickfields, Grange-walk, near the Rosemary Branch, Hoxton.

N.B. Red Pit Sand, of approved quality, constantly on sale, upon reasonable terms. In the erection of walls, where it is desirable that the work should be kept as free from damp as possible, this sand, from its not containing any saline matter, is acknowledged to be preferable to river sand.

NONSUCH BRICK and TILE WORKS, FIRE BRICK MANUFACTORY and POTTERY, Nonsuch-park, Ewell, Surrey. Established nearly a century.—STONE and SWALLOW, successors to the late W. R. Waghorn, deceased, respectfully beg to inform architects, surveyors, builders, &c., they continue to manufacture every description of brick and tile, plain and ornamental; grooved ridge tiles, and crest ornaments for ditto, of various patterns, red or black; chimney-pots, plain and ornamental; hovelled and armed ditto; plain and cannon-head black glazed ditto; socket drain pipes, all sizes, plain and glazed, with suitable bends, junctions, syphons, &c.; stout barrel drain tiles, all sizes; paving tiles, square, hexagon, or octagon, red, black, or white; paving bricks; oven tiles for bakers' ovens; 9-inch tiles for setting brewers' and dyers' coppers; red or white bricks, and ornamental tiles moulded to any pattern, to suit any style of building. Flower-pots and pans, all sizes; seed-pans, water-troughs, for hot-water pipes, &c. N.N. Nonsuch red and white fire bricks, and fire clay for copper smelting works, chemical works, and gas works. Guard shields and door tiles for retorts, wedge and arch fire bricks, and every other description of fire brick and tile.—VASES, FIGURES, &c. &c. in TERRA COTTA, in a great variety of patterns; these are warranted to withstand exposure to any weather, being well burnt, as durable as stone, and of a beautiful light stone colour.

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